MBS WinFrameworks Plugin Documentation

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March 10, 2024

0.1 Introduction

This is the PDF version of the documentation for the Xojo Plug-in from Monkeybread Software Germany.
Plugin part: MBS WinFrameworks Plugin

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Chapter 4

Bluetooth

4.1 class WindowsBluetoothDeviceIdMBS

4.1.1 class WindowsBluetoothDeviceIdMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a bluetooth device ID.
Notes: Requires Windows 10 Fall Creators Update (introduced in 10.0.16299.0)
Blog Entries

- MBS Xojo Plugins, version 23.3pr2
- The Top 10 from the MBS Xojo Plugins in 2022
- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr6

4.1.2 Methods

4.1.3 Constructor(ID as String)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a BluetoothDeviceId object from the device ID.

4.1.4 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.1.5 FromID(ID as String) as WindowsBluetoothDeviceIdMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a BluetoothDeviceId object from the device ID.
Notes: Returns nil in case of an error.

4.1.6 Properties

4.1.7 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.1.8 Id as String

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the bluetooth device ID.
Notes: (Read only property)

4.1.9 IsClassicDevice as Boolean

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a boolean indicating if this is a classic device.
Notes: (Read only property)

4.1.10 IsLowEnergyDevice as Boolean

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a boolean indicating if this is a LowEnergy device.
Notes: (Read only property)

4.2 class WindowsBluetoothLEAdvertisementMBS

4.2.1 class WindowsBluetoothLEAdvertisementMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for a bluetooth LE advertisement.
Notes: This class is used to represent an advertisement received by the system, an advertisement pattern to filter for, or an advertisement payload that needs to be published. In the case it is generated by the system to represent an advertisement received, certain properties are automatically populated.

For more information about its usage, refer to WindowsBluetoothLEAdvertisementWatcherMBS class for receiving advertisements and the WindowsBluetoothLEAdvertisementPublisherMBS class for sending advertisements.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022
- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr6

4.2.2 Methods

4.2.3 Constructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.2.4 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.2.5 ManufacturerData as WindowsBluetoothLEManufacturerDataMBS()

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The list of manufacturer-specific data sections.

4.2.6 ServiceUuids as String()

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the list of service UUIDs (in 128-bit GUID format) in a BluetoothLEAdvertisement.
Notes: An array of GUID, representing the list of service UUIDs in 128-bit GUID format. This property aggregates all the 16-bit, 32-bit, and 128-bit service UUIDs into a single list.
We convert this list to strings for Xojo.

4.2.7 Properties

4.2.8 Flags as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Bluetooth LE advertisement flags.
Notes: (Read only property)

4.2.9 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.2.10 LocalName as String

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The local name contained within the advertisement.
Notes: The local name contained within the advertisement. This property can be either the shortened or complete local name defined by the Bluetooth LE specifications.
(Read only property)

4.2.11 Constants

Flags

Constant	Value	Description
AdvertisementFlagsClassicNotSupported	4	Specifies Bluetooth BR/EDR not supported.
AdvertisementFlagsDualModeControllerCapable	8	Specifies simultaneous Bluetooth LE and BR/EDR to same (controller).
AdvertisementFlagsDualModeHostCapable	16	Specifies simultaneous Bluetooth LE and BR/EDR to same (host)
AdvertisementFlagsGeneralDiscoverableMode	2	Specifies Bluetooth LE General Discoverable Mode.
AdvertisementFlagsLimitedDiscoverableMode	1	Specifies Bluetooth LE Limited Discoverable Mode.
AdvertisementFlagsNone	0	Specifies no flag.

4.3 class WindowsBluetoothLEAdvertisementReceivedEventArgsMBS

4.3.1 class WindowsBluetoothLEAdvertisementReceivedEventArgsMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Provides data for a Received event on a WindowsBluetoothLEAdvertisementWatcherMBS.
Notes: A WindowsBluetoothLEAdvertisementReceivedEventArgsMBS instance is created when the Received event occurs on a WindowsBluetoothLEAdvertisementWatcherMBS object.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022
- Bluetooth LE on Windows
- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr6

4.3.2 Methods

4.3.3 Constructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.3.4 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.3.5 Properties

4.3.6 Advertisement as WindowsBluetoothLEAdvertisementMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth LE advertisement payload data received.
Notes: (Read only property)

4.3.7 AdvertisementType as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the type of the received Bluetooth LE advertisement packet.
Notes: (Read only property)

4.3.8 BluetoothAddress as UInt64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth address of the device sending the Bluetooth LE advertisement.
Notes: the Bluetooth address of the device sending the Bluetooth LE advertisement as an UInt64.
(Read only property)

4.3.9 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.3.10 RawSignalStrengthInDBm as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The received signal strength indicator (RSSI) value, in dBm, for this event.
Notes: Gets the received signal strength indicator (RSSI) value, in dBm, for this received Bluetooth LE advertisement event. This value could be the raw RSSI or a filtered RSSI depending on filtering settings configured through BluetoothSignalStrengthFilter.
(Read only property)

4.3.11 Constants

Constants

Constant	Value	Description
AdvertisementTypeConnectableDirected	1	Specifies the different types of Bluetooth LE advertisement pay The advertisement is directed and indicates that the device is co not scannable. This advertisement type cannot carry data. This corresponds with the ADV_DIRECT_IND type defined in LE specifications.
AdvertisementTypeConnectableUndirected	0	Specifies the different types of Bluetooth LE advertisement pay The advertisement is undirected and indicates that the device and scannable. This advertisement type can carry data. This corresponds with the ADV_IND type defined in the Bluet fications.
AdvertisementTypeNonConnectableUndirected	3	Specifies the different types of Bluetooth LE advertisement pay The advertisement is undirected and indicates that the device is n nor scannable. This advertisement type can carry data. This corresponds with the ADV_NONCONN_IND type define tooth LE specifications.
AdvertisementTypeScannableUndirected	2	Specifies the different types of Bluetooth LE advertisement pay The advertisement is undirected and indicates that the device is not connectable. This advertisement type can carry data. This corresponds with the ADV_SCAN_IND type defined in LE specifications.
AdvertisementTypeScanResponse	4	Specifies the different types of Bluetooth LE advertisement pay This advertisement is a scan response to a scan request issued f advertisement. This advertisement type can carry data. This corresponds with the SCAN_RSP type defined in the Bluet ifications.

4.4 class WindowsBluetoothLEAdvertisementWatcherMBS

4.4.1 class WindowsBluetoothLEAdvertisementWatcherMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: An object to receive Bluetooth Low Energy (LE) advertisements.
Example:

```
// use your own subclass
Watcher = New BLEAdvertisementWatcher
// e.g. output to some listbox
Watcher.list = listWatcher

// active scanning
watcher.ScanningMode = Watcher.ScanningModeActive

// start it
Watcher.Start
```

Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022
- Bluetooth LE on Windows
- BluetoothLE Watcher on Windows
- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr6

4.4.2 Methods

4.4.3 Available as Boolean

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Whether this class is available.
Notes: Returns true on Windows and false otherwise.

4.4.4 Constructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The constructor.

4.4.5 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.4.6 Start

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Start the BluetoothLEAdvertisementWatcher to scan for Bluetooth LE advertisements.
Example:

```
// use your own subclass
Watcher = New BLEAdvertisementWatcher
// e.g. output to some listbox
Watcher.list = listWatcher

// active scanning
watcher.ScanningMode = Watcher.ScanningModeActive

// start it
Watcher.Start
```

Notes: This method will transition the WindowsBluetoothLEAdvertisementWatcherMBS to the Started state immediately with a pending scan request or to the Aborted state if the request failed immediately due to error.
If this method is called in the Stopping state, the request will be pended and the state will remain in the Stopping state until the request completes, at which time a new request will be sent and the state will transition to the Started state.
The WindowsBluetoothLEAdvertisementWatcherMBS will be automatically stopped when an app is suspended.

4.4.7 Stop

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Stop the BluetoothLEAdvertisementWatcher and disable the scanning for Bluetooth LE advertisements.
Notes: This method will transition the WindowsBluetoothLEAdvertisementWatcherMBS to the Stopping state until the scan is cancelled in which the state will transition to the Stopped state. Calling this method in the Stopped or Aborted state has no effect. Calling this method in the Stopping state will overwrite any advertisements received in the last Start method call during that state.
The WindowsBluetoothLEAdvertisementWatcherMBS will be automatically stopped when an app is suspended.

4.4.8 Properties

4.4.9 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.4.10 MaxOutOfRangeTimeout as Int64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum out of range timeout.
Notes: (Read only property)

4.4.11 MaxSamplingInterval as Int64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum sampling interval.
Notes: (Read only property)

4.4.12 MinOutOfRangeTimeout as Int64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum out of range timeout.
Notes: (Read only property)

4.4.13 MinSamplingInterval as Int64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum sampling interval.
Notes: (Read only property)

4.4.14 ScanningMode as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the Bluetooth LE scanning mode.
Notes: (Read and Write property)

4.4.15 Status as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the current status of the WindowsBluetoothLEAdvertisementWatcherMBS.
Notes: (Read only property)

4.4.16 Events

4.4.17 Received(Args as WindowsBluetoothLEAdvertisementReceivedEventArgsMBS)

Plugin Version: 22.2, Platform: Windows, Targets: .

Function: Notification for new Bluetooth LE advertisement events received.

4.4.18 Stopped(Error as Integer)

Plugin Version: 22.2, Platform: Windows, Targets: .

Function: Notification to the app that the Bluetooth LE scanning for advertisements has been cancelled or aborted either by the app or due to an error.

4.4.19 Constants

Errors

Constant	Value	Description
ErrorConsentRequired	8	The operation requires consent.
ErrorDeviceNotConnected	3	The operation cannot be completed because the remote device is not connected.
ErrorDisabledByPolicy	5	The operation is disabled by policy.
ErrorDisabledByUser	7	The operation is disabled by the user.
ErrorNotSupported	6	The operation is not supported on the current Bluetooth radio hardware.
ErrorOtherError	4	An unexpected error has occurred.
ErrorRadioNotAvailable	1	The Bluetooth radio was not available. This error occurs when the Bluetooth radio has been turned off.
ErrorResourceInUse	2	The operation cannot be serviced because the necessary resources are currently in use.
ErrorSuccess	0	The operation was successfully completed or serviced.
ErrorTransportNotSupported	9	The transport is not supported.

Scan modes

Constant	Value	Description
ScanningModeActive	1	Specifies an active scanning mode. This indicates that scan request packets will be sent from the platform to actively query for more advertisement data of type ScanResponse.
ScanningModePassive	0	Specifies a passive scanning mode. This is the default scanning mode.

Status

Constant	Value	Description
StatusAborted	4	An error occurred during transition or scanning that stopped the watcher due to an error.
StatusCreated	0	The initial status of the watcher.
StatusStarted	1	The watcher is started.
StatusStopped	3	The watcher is stopped.
StatusStopping	2	The watcher stop command was issued.

4.5 class WindowsBluetoothLEAppearanceMBS

4.5.1 class WindowsBluetoothLEAppearanceMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Provides functionality to determine the Bluetooth Low Energy (LE) Appearance information for a device.
Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022
- News from the MBS Xojo Plugins Version 22.2
- MBS Xojo Plugins, version 22.2pr6

4.5.2 Methods

4.5.3 CategoryBarcodeScanner as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the barcode scanner appearance category code.

4.5.4 CategoryBloodPressure as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the blood pressure appearance category code.

4.5.5 CategoryClock as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the clock appearance category code.

4.5.6 CategoryComputer as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the computer appearance category code.

4.5.7 CategoryCycling as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling appearance category code.

4.5.8 CategoryDisplay as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the display appearance category code.

4.5.9 CategoryEyeGlasses as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the eye glasses appearance category code.

4.5.10 CategoryGlucoseMeter as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the glucose meter appearance category code.

4.5.11 CategoryHeartRate as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the heart rate appearance category code.

4.5.12 CategoryHumanInterfaceDevice as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the human interface device appearance category code.

4.5.13 CategoryKeyring as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the key ring appearance category code.

4.5.14 CategoryMediaPlayer as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the media player appearance category code.

4.5.15 CategoryOutdoorSportActivity as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the outdoor sport activity appearance category code.

4.5.16 CategoryPhone as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the phone appearance category code.

4.5.17 CategoryPulseOximeter as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the pulse oximeter appearance category code.

4.5.18 CategoryRemoteControl as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the remote control appearance category code.

4.5.19 CategoryRunningWalking as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the running or walking appearance category code.

4.5.20 CategoryTag as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the tag appearance category code.

4.5.21 CategoryThermometer as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the thermometer appearance category code.

4.5.22 CategoryUncategorized as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the uncategorized appearance category code.

4.5.23 CategoryWatch as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the watch appearance category code.

4.5.24 CategoryWeightScale as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the weight scale appearance category code.

4.5.25 Constructor(appearanceCategory as UInt16, appearanceSubCategory as UInt16)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a BluetoothLEAppearance object by supplying values for Category and Subcategory of the Bluetooth LE device.
See also:

- 4.5.26 Constructor(RawValue as UInt16) 70

4.5.26 Constructor(RawValue as UInt16)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a BluetoothLEAppearance object by supplying for raw integer values representing the Category and Subcategory of the Bluetooth LE device.
See also:

- 4.5.25 Constructor(appearanceCategory as UInt16, appearanceSubCategory as UInt16) 70

4.5.27 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.5.28 SubcategoryBarcodeScanner as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the pulse barcode scanner appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.29 SubcategoryBloodPressureArm as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the blood pressure arm appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the BloodPressure appearance category.

4.5.30 SubcategoryBloodPressureWrist as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the blood pressure wrist appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the BloodPressure appearance category.

4.5.31 SubcategoryCardReader as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the card reader appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.32 SubcategoryCyclingCadenceSensor as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling cadence sensor appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the Cycling appearance category.

4.5.33 SubcategoryCyclingComputer as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling computer appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the Cycling appearance category.

4.5.34 SubcategoryCyclingPowerSensor as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling power sensor appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the Cycling appearance category.

4.5.35 SubcategoryCyclingSpeedCadenceSensor as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling speed cadence sensor appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the Cycling appearance category.

4.5.36 SubcategoryCyclingSpeedSensor as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the cycling speed sensor appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the Cycling appearance category.

4.5.37 SubcategoryDigitalPen as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the digital pen appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.38 SubcategoryDigitizerTablet as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the digitizer tablet appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.39 SubcategoryGamepad as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the gamepad appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.40 SubcategoryGeneric as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the generic appearance subcategory code.

4.5.41 SubcategoryHeartRateBelt as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the heart rate belt appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HeartRate appearance category.

4.5.42 SubcategoryJoystick as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the joystick appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.43 SubcategoryKeyboard as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the keyboard appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.44 SubcategoryLocationDisplay as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the location display appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the OutdoorSportActivity appearance category.

4.5.45 SubcategoryLocationNavigationDisplay as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the location navigation display appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the OutdoorSportActivity appearance category.

4.5.46 SubcategoryLocationNavigationPod as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the location navigation pod appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the OutdoorSportActivity appearance category.

4.5.47 SubcategoryLocationPod as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the location pod appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the OutdoorSportActivity appearance category.

4.5.48 SubcategoryMouse as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the mouse appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the HumanInterfaceDevice appearance category.

4.5.49 SubcategoryOximeterFingertip as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the oximeter fingertip appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the PulseOximeter appearance category.

4.5.50 SubcategoryOximeterWristWorn as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the oximeter wrist worn appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the PulseOximeter appearance category.

4.5.51 SubcategoryRunningWalkingInShoe as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the running or walking in shoe appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the RunningWalking appearance category.

4.5.52 SubcategoryRunningWalkingOnHip as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the running or walking on hip appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the RunningWalking appearance category.

4.5.53 SubcategoryRunningWalkingOnShoe as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the running or walking on shoe appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the RunningWalking appearance category.

4.5.54 SubcategorySportsWatch as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the sports watch appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the RunningWalking appearance category.

4.5.55 SubcategoryThermometerEar as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the ear thermometer appearance subcategory code.
Notes: This is only applicable for Bluetooth LE devices that are part of the RunningWalking appearance category.

4.5.56 Properties

4.5.57 Category as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the appearance category value of the Bluetooth LE device.
Notes: (Read only property)

4.5.58 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.5.59 RawValue as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The appearance raw value of the Bluetooth LE device.
Notes: (Read only property)

4.5.60 SubCategory as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the appearance subcategory value of the Bluetooth LE device.
Notes: (Read only property)

4.6 class WindowsBluetoothLEDeviceMBS

4.6.1 class WindowsBluetoothLEDeviceMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a Bluetooth LE device.
Notes: Requires Windows 10 (introduced in 10.0.10240.0)
Blog Entries

- News from the MBS Xojo Plugins Version 24.0
- MBS Xojo Plugins, version 23.6pr3
- News from the MBS Xojo Plugins Version 23.3
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.0
- The Top 10 from the MBS Xojo Plugins in 2022
- Bluetooth LE on Windows
- News from the MBS Xojo Plugins Version 22.5
- MonkeyBread Software Releases the MBS Xojo Plugins in version 22.5
- News from the MBS Xojo Plugins Version 22.3
- News from the MBS Xojo Plugins Version 22.2

Xojo Developer Magazine

- 21.3, page 10: News
- 21.2, page 9: News

4.6.2 Methods

4.6.3 Close

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Closes this Bluetooth LE device.
Notes: This may close the connection to the device if this is the only app with a connection.

4.6.4 Constructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.6.5 Constructor(other as WindowsBluetoothLEDeviceMBS) 78

4.6.5 Constructor(other as WindowsBluetoothLEDeviceMBS)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Copy constructor.
Notes: To get a new Xojo object pointing to the same device object.
See also:

- 4.6.4 Constructor 78

4.6.6 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.6.7 FromBluetoothAddress(bluetoothAddress as UInt64) as WindowsBluetoothLEDeviceMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns a BluetoothLEDevice object representing the peer Bluetooth LE device with the given address.
Notes: Synchronous version, which may blocks the application until the function finished.
See also:

- 4.6.8 FromBluetoothAddress(bluetoothAddress as UInt64, BluetoothAddressType as Integer) as WindowsBluetoothLEDeviceMBS 78

4.6.8 FromBluetoothAddress(bluetoothAddress as UInt64, BluetoothAddressType as Integer) as WindowsBluetoothLEDeviceMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns a BluetoothLEDevice object representing the peer Bluetooth LE device with the given address.
Notes: Synchronous version, which may blocks the application until the function finished.
See also:

- 4.6.7 FromBluetoothAddress(bluetoothAddress as UInt64) as WindowsBluetoothLEDeviceMBS 78

4.6.9 FromBluetoothAddressAsync(bluetoothAddress as UInt64, BluetoothAddressType as Integer, delegateHandler as DeviceFromBluetoothAddressAsyncCompletedMBS)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns a BluetoothLEDevice object representing the peer device with the given address and address type.
Notes: bluetoothAddress: A BluetoothAddress value containing the 64-bit address of the peer Bluetooth LE device.

bluetoothAddressType: A BluetoothAddressType value containing the address type of the peer Bluetooth LE device.

The returned BluetoothLEDevice is set to nil if FromBluetoothAddressAsync can't find the device identified by bluetoothAddress. Specifically, if the device isn't paired and it isn't found in the system cache. You can populate the cache for a non-paired device using either the LE advertisement watcher APIs (BluetoothLEAdvertisementWatcher) or the device enumeration APIs (GetDeviceSelectorFromPairingState) to scan for the Bluetooth devices before the FromBluetoothAddressAsync can be successfully used.

Calls delegate later when we have a result.

Creating a BluetoothLEDevice object by calling this method alone doesn't (necessarily) initiate a connection. To initiate a connection, set GattSession.MaintainConnection to true, or call an uncached service discovery method on BluetoothLEDevice, or perform a read/write operation against the device.
If GattSession.MaintainConnection is set to true, then the system waits indefinitely for a connection, and it will connect when the device is available. There's nothing for your application to wait on, since GattSession.MaintainConnection is a property.
For service discovery and read/write operations in GATT, the system waits a finite but variable time. Anything from instantaneous to a matter of minutes. Factors include the traffic on the stack, and how queued up the request is. If there are no other pending request, and the remote device is unreachable, then the system will wait for 7 seconds before it times out. If there are other pending requests, then each of the requests in the queue can take 7 seconds to process, so the further yours is toward the back of the queue, the longer you'll wait.
You can't cancel the connection process.
See also:

- 4.6.10 FromBluetoothAddressAsync(bluetoothAddress as UInt64, delegateHandler as DeviceFromBlue-

toothAddressAsyncCompletedMBS) 80

4.6.10 FromBluetoothAddressAsync(bluetoothAddress as UInt64, delegateHandler as DeviceFromBluetoothAddressAsyncCompletedMBS)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns a BluetoothLEDevice object representing the peer Bluetooth LE device with the given address.
Notes: bluetoothAddress: A BluetoothAddress value containing the 64-bit address of the peer Bluetooth LE device.

The returned BluetoothLEDevice is set to nil if FromBluetoothAddressAsync can't find the device identified by bluetoothAddress. Specifically, if the device isn't paired and it isn't found in the system cache. You can populate the cache for a non-paired device using either the LE advertisement watcher APIs (BluetoothLEAdvertisementWatcher) or the device enumeration APIs (GetDeviceSelectorFromPairingState) to scan for the Bluetooth devices before the FromBluetoothAddressAsync can be successfully used.

Calls delegate later when we have a result.

Creating a BluetoothLEDevice object by calling this method alone doesn't (necessarily) initiate a connection. To initiate a connection, set GattSession.MaintainConnection to true, or call an uncached service discovery method on BluetoothLEDevice, or perform a read/write operation against the device.
If GattSession.MaintainConnection is set to true, then the system waits indefinitely for a connection, and it will connect when the device is available. There's nothing for your application to wait on, since GattSession.MaintainConnection is a property.
For service discovery and read/write operations in GATT, the system waits a finite but variable time. Anything from instantaneous to a matter of minutes. Factors include the traffic on the stack, and how queued up the request is. If there are no other pending request, and the remote device is unreachable, then the system will wait for 7 seconds before it times out. If there are other pending requests, then each of the requests in the queue can take 7 seconds to process, so the further yours is toward the back of the queue, the longer you'll wait.
You can't cancel the connection process.
See also:

- 4.6.9 FromBluetoothAddressAsync(bluetoothAddress as UInt64, BluetoothAddressType as Integer, delegateHandler as DeviceFromBluetoothAddressAsyncCompletedMBS) 79

4.6.11 FromId(Id as String) as WindowsBluetoothLEDeviceMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries a BluetoothLEDeviceMBS object for the given Id.
Notes: Id: The Id of the Bluetooth LE device.

Synchronous version, which may blocks the application until the function finished.

4.6.12 FromIdAsync(Id as String, delegateHandler as DeviceFromIdAsyncCompletedMBS)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries a BluetoothLEDeviceMBS object for the given Id.
Notes: Id: The Id of the Bluetooth LE device.
Calls delegate later when we have a result.

4.6.13 GetDeviceSelector as String

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets an Advanced Query Syntax (AQS) string for identifying all Bluetooth Low Energy (LE) devices.
Notes: This string is passed to the FindAllAsync or CreateWatcher method in order to get a list of Bluetooth LE devices.

4.6.14 GetDeviceSelectorFromAppearance(Appearance as WindowsBluetoothLEAppearanceMBS) as String

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates an Advanced Query Syntax (AQS) filter string from a BluetoothLEAppearance object.
Notes: The AQS string is passed into the CreateWatcher method to return a collection of DeviceInformation objects with the specified appearance.

4.6.15 GetGattService(serviceUUID as String) as WindowsGattDeviceServiceMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns the GATT service with the given service Id.
Notes: serviceUUID: The service Id of the GATT service.

4.6.16 GetGattServicesAsync

Plugin Version: 22.5, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries available GATT services for this device.
Notes: Calls GetGattServicesCompleted event later with results.
See also:

- 4.6.17 GetGattServicesAsync(BluetoothCacheMode as Integer) 82

4.6.17 GetGattServicesAsync(BluetoothCacheMode as Integer)

Plugin Version: 22.5, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries available GATT services for this device.
Notes: Calls GetGattServicesCompleted event later with results.

For cache mode, see CacheModeCached and CacheModeUncached constants in WindowsGattDeviceServiceMBS class.
See also:

- 4.6.16 GetGattServicesAsync 81

4.6.18 GetGattServicesForUuidAsync(serviceUuid as String)

Plugin Version: 22.5, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries available GATT services for this device with given UUID.
Notes: Calls GetGattServicesCompleted event later with results.
See also:

- 4.6.19 GetGattServicesForUuidAsync(serviceUuid as String, BluetoothCacheMode as Integer) 82

4.6.19 GetGattServicesForUuidAsync(serviceUuid as String, BluetoothCacheMode as Integer)

Plugin Version: 22.5, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries available GATT services for this device with given UUID.
Notes: Calls GetGattServicesCompleted event later with results.

For cache mode, see CacheModeCached and CacheModeUncached constants in WindowsGattDeviceServiceMBS class.
See also:

- 4.6.18 GetGattServicesForUuidAsync(serviceUuid as String) 82

4.6.20 RequestAccessAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Requests access to the Bluetooth LowEnergy device.
Notes: Calls RequestAccessAsyncCompleted event later.

4.6.21 Properties

4.6.22 Appearance as WindowsBluetoothLEAppearanceMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the BluetoothLEAppearance object for the Bluetooth LE device.
Notes: (Read only property)

4.6.23 BluetoothAddress as UInt64

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the device address.
Notes: (Read only property)

4.6.24 BluetoothAddressType as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the address type for the Bluetooth LE device.
Notes: (Read only property)

4.6.25 BluetoothDeviceId as WindowsBluetoothDeviceIdMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the bluetooth device ID.
Notes: (Read only property)

4.6.26 ConnectionStatus as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the connection status of the device.
Notes: Either ConnectionStatusConnected or ConnectionStatusDisconnected.
(Read only property)

4.6.27 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.6.28 Name as String

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the Bluetooth LE device.
Notes: (Read only property)

4.6.29 Pairing as WindowsDeviceInformationPairingMBS

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries pairing object for the bluetooth device.
Notes: (Read only property)

4.6.30 WasSecureConnectionUsedForPairing as Boolean

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a boolean indicating whether the BluetoothLEDevice was paired using a Secure Connection.
Notes: (Read only property)

4.6.31 Events

4.6.32 ConnectionStatusChanged

Plugin Version: 22.5, Platform: Windows, Targets: .

Function: The connection status changed.

4.6.33 GattServicesChanged

Plugin Version: 22.5, Platform: Windows, Targets: .

Function: The services changed.

4.6.34 GetGattServicesCompleted(asyncStatus as Integer, Result as WindowsGattDeviceServicesResultMBS)

Plugin Version: 22.5, Platform: Windows, Targets: .

Function: The event called by GetGattServicesForUuidAsync or GetGattServicesAsync methods on completion.

4.6.35 NameChanged

Plugin Version: 22.5, Platform: Windows, Targets: .

Function: The name changed.

4.6.36 PairAsyncCompleted(asyncStatus as Integer, PairingStatus as Integer, ProtectionLevelUsed as Integer)

Plugin Version: 24.0, Platform: Windows, Targets: .

Function: Called when PairAsync method finishes.
Notes: ProtectionLevelUsed: Gets the level of protection used to pair the device.
Status: Gets the paired status of the device after the pairing action completed.

4.6.37 RequestAccessCompleted(asyncStatus as Integer, DeviceAccessStatus as Integer)

Plugin Version: 22.5, Platform: Windows, Targets: .

Function: The request for access completed.

4.6.38 UnpairAsyncCompleted(asyncStatus as Integer, UnpairingStatus as Integer)

Plugin Version: 24.0, Platform: Windows, Targets: .

Function: Called when the UnpairAsync method finished.
Notes: Status: Gets the paired status of the device after the unpairing action completed.

4.6.39 Constants

Address Type

Constant	Value	Description
AddressTypePublic	0	Public address.
AddressTypeRandom	1	Random address.
AddressTypeUnspecified	2	Unspecified address.

Asynchronous Status

Constant	Value	Description
AsyncStatusCanceled	2	The operation was canceled.
AsyncStatusCompleted	1	The operation has completed.
AsyncStatusError	3	The operation has encountered an error.
AsyncStatusStarted	0	The operation has started.

ConnectionStatus

Constant	Value	Description
ConnectionStatusConnected	1	The device is connected.
ConnectionStatusDisconnected	0	The device is disconnected.

Device Access Status

Constant	Value	Description
DeviceAccessStatusAllowed	1	Access to the device is allowed.
DeviceAccessStatusDeniedBySystem	3	Access to the device has been disallowed by the system.
DeviceAccessStatusDeniedByUser	2	Access to the device has been disallowed by the user.
DeviceAccessStatusUnspecified	0	The device access is not specified.

4.6.40 Delegates

4.6.41 DeviceFromBluetoothAddressAsyncCompletedMBS(AsyncStatus as Integer, Device as WindowsBluetoothLEDeviceMBS)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate for FromBluetoothAddressAsync results.

4.6.42 DeviceFromIdAsyncCompletedMBS(AsyncStatus as Integer, Device as WindowsBluetoothLEDeviceMBS)

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate for FromIdAsync results.

4.7 class WindowsBluetoothLEExceptionMBS

4.7.1 class WindowsBluetoothLEExceptionMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: The exception for errors reported by WindowsBluetoothLE classes.
Notes: Subclass of the RuntimeException class.
Blog Entries

- MBS Xojo Plugins, version 22.2pr6

4.8 class WindowsBluetoothLEManufacturerDataMBS

4.8.1 class WindowsBluetoothLEManufacturerDataMBS

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for manufacturer-specific data.
Notes: A Bluetooth LE manufacturer-specific data section (one particular type of LE advertisement section).
A Bluetooth LE advertisement packet can contain multiple instances of these BluetoothLEManufacturerData objects.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 22.2pr6

4.8.2 Methods

4.8.3 Constructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.8.4 Destructor

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.8.5 Properties

4.8.6 CompanyId as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The Bluetooth LE company identifier code.
Notes: The Bluetooth LE company identifier code as defined by the Bluetooth Special Interest Group (SIG).
(Read only property)

4.8.7 Data as MemoryBlock

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Bluetooth LE manufacturer-specific section data.
Notes: (Read only property)

4.8.8 Handle as Integer

Plugin Version: 22.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.9 class WindowsDeviceInformationPairingMBS

4.9.1 class WindowsDeviceInformationPairingMBS

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Contains information and enables pairing for a device.
Blog Entries

- MonkeyBread Software Releases the MBS Xojo Plugins in version 24.0
- MBS Xojo Plugins, version 23.6pr3
- MBS Xojo Plugins, version 23.6pr1
- News from the MBS Xojo Plugins Version 23.4
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.4
- MBS Xojo Plugins, version 23.4pr1

4.9.2 Methods

4.9.3 Constructor

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.9.4 Constructor(other as WindowsDeviceInformationPairingMBS) 91

4.9.4 Constructor(other as WindowsDeviceInformationPairingMBS)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
See also:

- 4.9.3 Constructor 91

4.9.5 Destructor

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.9.6 PairAsync

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Attempts to pair the device.
Notes: Calls PairAsyncCompleted later.
See also:

- 4.9.7 PairAsync(minProtectionLevel as Integer) 92

4.9.7 PairAsync(minProtectionLevel as Integer)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Attempts to pair the device using a provided level of protection.
Notes: minProtectionLevel: The required level of protection to use for the pairing action.

Calls PairAsyncCompleted later.
See also:

- 4.9.6 PairAsync 92

4.9.8 TryRegisterForAllInboundPairingRequests(pairingKindsSupported as Integer) as Boolean

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Registers the application to handle all inbound pairing requests.
Notes: pairingKindsSupported: The pairing kinds your app supports.

Returns true whether or not the attempt was successful.

4.9.9 TryRegisterForAllInboundPairingRequestsWithProtectionLevel(pairingKindsSupported as Integer, minProtectionLevel as Integer) as Boolean

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Registers the application to handle all inbound pairing requests with the specified minimum level of protection.
Notes: pairingKindsSupported: The pairing kinds your app supports.
minProtectionLevel: The required minimum level of protection to accept for the pairing requests.

Returns true whether or not the attempt was successful.

4.9.10 UnpairAsync

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Attempts to unpair the device.

4.9.11 Properties

4.9.12 CanPair as Boolean

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a value that indicates whether the device can be paired.
Notes: True if the device can be paired, otherwise false.
(Read only property)

4.9.13 Device as WindowsBluetoothLEDeviceMBS

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The device to pair.
Notes: (Read only property)

4.9.14 Handle as Integer

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.9.15 IsPaired as Boolean

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a value that indicates whether the device is currently paired.
Notes: True if the device is currently paired, otherwise false.
(Read only property)

4.9.16 ProtectionLevel as Integer

Plugin Version: 23.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the level of protection used to pair the device.
Notes: The protection level, e.g. ProtectionLevelEncryptionAndAuthenticationRequired constant.
(Read only property)

4.9.17 Events

4.9.18 PairAsyncCompleted(asyncStatus as Integer, PairingStatus as Integer, ProtectionLevelUsed as Integer)

Plugin Version: 23.4, Platform: Windows, Targets: .

Function: Called when PairAsync method finishes.
Notes: ProtectionLevelUsed: Gets the level of protection used to pair the device.
Status: Gets the paired status of the device after the pairing action completed.

4.9.19 UnpairAsyncCompleted(asyncStatus as Integer, UnpairingStatus as Integer)

Plugin Version: 23.4, Platform: Windows, Targets: .

Function: Called when the UnpairAsync method finished.
Notes: Status: Gets the paired status of the device after the unpairing action completed.

4.9.20 Constants

Pairing Kinds

Constant	Value	Description
DevicePairingKindsConfirmOnly	1	The application must confirm they wish to perform the pairing You can present an optional confirmation dialog to the user. W ConfirmOnly, call Accept from the event args of the PairingRe handler if you want the pairing to complete.
DevicePairingKindsConfirmPinMatch	8	The application must display the given PIN to the user and a confirm that the PIN matches the one show on the target devic With a value of ConfirmPinMatch, call Accept from the eve PairingRequested event handler if you want the pairing to comp
DevicePairingKindsDisplayPin	2	The application must display the given PIN to the user. The user will then need to enter or confirm that PIN on the being paired. With a value of DisplayPin, call Accept from the the PairingRequested event handler if you want the pairing to co application cancels the pairing at this point, the device might This is because the system and the target device don't need an for this DevicePairingKinds value.
DevicePairingKindsNone	0	No pairing is supported.
DevicePairingKindsProvidePasswordCredential	16	The application must request a user name and password from t With a value of ProvidePasswordCredential, call AcceptWithPas tial from the event args of the PairingRequested event handler pairing. Pass in the PasswordCredential that encapsulates the password as a parameter.
DevicePairingKindsProvidePin	4	The application must request a PIN from the user. The PIN will typically be displayed on the target device. W ProvidePin, call Accept from the event args of the PairingRe handler if you want the pairing to complete. Pass in the PIN as

Protection Levels

Constant	Value	Description
DevicePairingProtectionLevelDefault	0	The default value. This should not be used.
DevicePairingProtectionLevelEncryption	2	Pair the device using encryption.
DevicePairingProtectionLevelEncryptionAndAuthentication	3	Pair the device using encryption and authenticatio
DevicePairingProtectionLevelNone	1	Pair the device using no levels of protection.
ProtectionLevelAuthenticationRequired	1	Require the link to be authenticated.
ProtectionLevelEncryptionAndAuthenticationRequired	3	Require the link to be encrypted and authenticate
ProtectionLevelEncryptionRequired	2	Require the link to be encrypted.
ProtectionLevelPlain	0	Uses the default protection level.

Pairing Status

Constant	Value	Description
DevicePairingResultStatusAccessDenied	12	Your application does not have the appropriate per device object.
DevicePairingResultStatusAlreadyPaired	3	The device object has already been paired.
DevicePairingResultStatusAuthenticationFailure	9	Authentication failed, so the device is not paired. E the application rejected the authentication.
DevicePairingResultStatusAuthenticationNotAllowed	8	The authentication protocol is not supported, so the
DevicePairingResultStatusAuthenticationTimeout	7	The authentication process timed out before it coul
DevicePairingResultStatusConnectionRejected	4	The device object rejected the connection.
DevicePairingResultStatusFailed	19	An unknown failure occurred.
DevicePairingResultStatusHardwareFailure	6	The device object indicated there was a hardware fa
DevicePairingResultStatusInvalidCeremonyData	13	The ceremony data was incorrect.
DevicePairingResultStatusNoSupportedProfiles	10	There are no network profiles for this device object
DevicePairingResultStatusNotPaired	2	The device object is not currently paired.
DevicePairingResultStatusNotReadyToPair	1	The device object is not in a state where it can be p
DevicePairingResultStatusOperationAlreadyInProgress	15	The device object is already attempting to pair or u
DevicePairingResultStatusPaired	0	The device object is now paired.
DevicePairingResultStatusPairingCanceled	14	The pairing action was canceled before completion.
DevicePairingResultStatusProtectionLevelCouldNotBeMet	11	The minimum level of protection is not supported b application.
DevicePairingResultStatusRejectedByHandler	17	The application handler rejected the pairing.
DevicePairingResultStatusRemoteDeviceHasAssociation	18	The remove device already has an association.
DevicePairingResultStatusRequiredHandlerNotRegistered	16	Either the event handler wasn't registered or a req was not supported.
DevicePairingResultStatusTooManyConnections	5	The device object indicated it cannot accept any mo

Unpairing Status

Constant	Value	Description
DeviceUnpairingResultStatusAccessDenied	3	The caller does not have sufficient permissions to unp
DeviceUnpairingResultStatusAlreadyUnpaired	1	The device object was already unpaired.
DeviceUnpairingResultStatusFailed	4	An unknown failure occurred.
DeviceUnpairingResultStatusOperationAlreadyInProgress	2	The device object is currently in the middle of eith action.
DeviceUnpairingResultStatusUnpaired	0	The device object is successfully unpaired.

4.10 class WindowsGattCharacteristicMBS

4.10.1 class WindowsGattCharacteristicMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a Characteristic of a GATT service.
Notes: The GattCharacteristic object represents a GATT Characteristic of a particular service, and is obtained from the Characteristics property of the GattDeviceService object.
Blog Entries

- News from the MBS Xojo Plugins in Version 23.0
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.0
- The Top 10 from the MBS Xojo Plugins in 2022
- Bluetooth LE on Windows
- MBS Xojo Plugins, version 22.6pr1
- News from the MBS Xojo Plugins Version 22.3
- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr6
- MBS Xojo Plugins, version 22.3pr5
- MBS Xojo Plugins, version 22.3pr1

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- 21.2, page 9: News

4.10.2 Methods

4.10.3 AlertCategoryId as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined AlertCategoryId characteristic UUID.

4.10.4 AlertCategoryIdBitMask as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-Defined AlertCategoryIdBitMask characteristic UUID.

4.10.5 AlertLevel as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined AlertLevel characteristic UUID.

4.10.6 AlertNotificationControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined AlertNotificationControlPoint characteristic UUID.

4.10.7 AlertStatus as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined AlertStatus characteristic UUID.

4.10.8 AllDescriptors as WindowsGattDescriptorMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the collection of all descriptors belonging to this GattCharacteristic instance.

4.10.9 BatteryLevel as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Battery Level Characteristic UUID.

4.10.10 BloodPressureFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Blood Pressure Feature Characteristic UUID.

4.10.11 BloodPressureMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Blood Pressure Measurement Characteristic UUID.

4.10.12 BodySensorLocation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Body Sensor Location Characteristic UUID.

4.10.13 BootKeyboardInputReport as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined BootKeyboardInputReport characteristic UUID.

4.10.14 BootKeyboardOutputReport as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined BootKeyboardOutputReport characteristic UUID.

4.10.15 BootMouseInputReport as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined BootMouseInputReport characteristic UUID.

4.10.16 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.10.17 Constructor(other as WindowsGattCharacteristicMBS) 100

4.10.17 Constructor(other as WindowsGattCharacteristicMBS)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
See also:

- 4.10.16 Constructor 99

4.10.18 ConvertShortIdToUuid(ID as UInt16) as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Converts a Bluetooth SIG defined short Id to a full GATT UUID.
Notes: ID: A 16-bit Bluetooth GATT Service UUID.

4.10.19 CscFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Csc Feature Characteristic UUID.

4.10.20 CscMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Csc Measurement Characteristic UUID.

4.10.21 CurrentTime as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CurrentTime characteristic UUID.

4.10.22 CyclingPowerControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CyclingPowerControlPoint characteristic UUID.

4.10.23 CyclingPowerFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CyclingPowerFeature characteristic UUID.

4.10.24 CyclingPowerMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CyclingPowerMeasurement characteristic UUID.

4.10.25 CyclingPowerVector as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CyclingPowerVector characteristic UUID.

4.10.26 DateTime as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined DateTime characteristic UUID.

4.10.27 DayDateTime as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined DayDateTime characteristic UUID.

4.10.28 DayOfWeek as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined DayOfWeek characteristic UUID.

4.10.29 Descriptors(characteristicUUID as String) as WindowsGattDescriptorMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns descriptors, that are identified by the specified UUID, and belong to this GattCharacteristic instance.

4.10.30 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.10.31 DstOffset as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined DstOffset characteristic UUID.

4.10.32 ExactTime256 as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ExactTime256 characteristic UUID.

4.10.33 FirmwareRevisionString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined FirmwareRevisionString characteristic UUID.

4.10.34 GapAppearance as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined GapAppearance characteristic UUID.

4.10.35 GapDeviceName as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined GapDeviceName characteristic UUID.

4.10.36 GapPeripheralPreferredConnectionParameters as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined GapPeripheralPreferredConnectionParameters characteristic UUID.

4.10.37 GapPeripheralPrivacyFlag as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth GapPeripheralPrivacyFlag characterisitc UUID.

4.10.38 GapReconnectionAddress as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined GapReconnectionAddress characteristic UUID.

4.10.39 GattServiceChanged as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined GattServiceChanged characteristic UUID.

4.10.40 GetDescriptorsAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns the descriptors for this GattCharacteristic instance.
Notes: Calls DescriptorsCompleted event later when finished.
See also:

- 4.10.41 GetDescriptorsAsync(BluetoothCacheMode as Integer) 104

4.10.41 GetDescriptorsAsync(BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns the descriptors with the specified cache mode for this GattCharacteristic instance.
Notes: Calls DescriptorsCompleted event later when finished.
See also:

- 4.10.40 GetDescriptorsAsync 103

4.10.42 GetDescriptorsForUuidAsync(characteristicUuid as String)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns the descriptors whose UUIDs match descriptorUuid.
Notes: Calls DescriptorsCompleted event later when finished.
See also:

- 4.10.43 GetDescriptorsForUuidAsync(characteristicUuid as String, BluetoothCacheMode as Integer) 104

4.10.43 GetDescriptorsForUuidAsync(characteristicUuid as String, BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns the descriptors whose UUIDs match descriptorUuid with the specified cacheMode.
Notes: Calls DescriptorsCompleted event later when finished.
See also:

- 4.10.42 GetDescriptorsForUuidAsync(characteristicUuid as String) 104

4.10.44 GlucoseFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Glucose Feature Characteristic UUID.

4.10.45 GlucoseMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Glucose Measurement Characteristic UUID.

4.10.46 GlucoseMeasurementContext as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Glucose Measurement Context Characteristic UUID.

4.10.47 HardwareRevisionString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined HardwareRevisionString characterisitc UUID.

4.10.48 HeartRateControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Heart Rate Control Point Characteristic UUID.

4.10.49 HeartRateMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Heart Rate Measurement Characteristic UUID.

4.10.50 HidControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined HidControlPoint characteristic UUID.

4.10.51 HidInformation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined HidInformation characteristic UUID.

4.10.52 Ieee1107320601RegulatoryCertificationDataList as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Ieee1107320601RegulatoryCertificationDataList characteristic UUID.

4.10.53 IntermediateCuffPressure as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Intermediate Cuff Pressure Characteristic UUID.

4.10.54 IntermediateTemperature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Intermediate Temperature Characteristic UUID.

4.10.55 LnControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LnControlPoint characteristic UUID.

4.10.56 LnFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LnFeature characteristic UUID.

4.10.57 LocalTimeInformation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LocalTimeInformation characteristic UUID.

4.10.58 LocationAndSpeed as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LocationAndSpeed characteristic UUID.

4.10.59 ManufacturerNameString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ManufacturerNameString characteristic UUID.

4.10.60 MeasurementInterval as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Measurement Interval Characteristic UUID.

4.10.61 ModelNumberString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ModelNumberString UUID.

4.10.62 Navigation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Navigation characteristic UUID.

4.10.63 NewAlert as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined NewAlert characteristic UUID.

4.10.64 PnpId as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined PnpId characteristic UUID.

4.10.65 PositionQuality as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined PositionQuality characteristic UUID.

4.10.66 ProtocolMode as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ProtocolMode characteristic UUID.

4.10.67 ReadClientCharacteristicConfigurationDescriptorAsync

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Reads the current value of the ClientCharacteristicConfigurationDescriptor.
Notes: Calls ReadClientCharacteristicConfigurationDescriptorAsyncCompleted event later.

4.10.68 ReadValueAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value read from the value cache maintained by Windows.
Notes: Calls ReadValueAsyncCompleted event later.
See also:

- 4.10.69 ReadValueAsync(CacheMode as Integer) 108

4.10.69 ReadValueAsync(CacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value read either from the value cache maintained by Windows, or directly from the device.

Notes: Calls ReadValueAsyncCompleted event later.
See also:

- 4.10.68 ReadValueAsync 108

4.10.70 RecordAccessControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Record Access Control Point Characteristic UUID.

4.10.71 ReferenceTimeInformation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ReferenceTimeInformation characteristic UUID.

4.10.72 Report as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Report characteristic UUID.

4.10.73 ReportMap as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ReportMap characteristic UUID.

4.10.74 RingerControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined RingerControlPoint characteristic UUID.

4.10.75 RingerSetting as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined RingerSetting characteristic UUID.

4.10.76 RscFeature as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Rsc Feature Characteristic UUID.

4.10.77 RscMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Rsc Measurement Characteristic UUID.

4.10.78 ScanIntervalWindow as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ScanIntervalWindow characteristic UUID.

4.10.79 ScanRefresh as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ScanRefresh characteristic UUID.

4.10.80 SCControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SC Control Point Characteristic UUID.

4.10.81 SensorLocation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Sensor Location Characteristic UUID.

4.10.82 SerialNumberString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SerialNumberString characteristic UUID.

4.10.83 SoftwareRevisionString as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SoftwareRevisionString characteristic UUID.

4.10.84 SupportedNewAlertCategory as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SupportedNewAlertCategory characteristic UUID.

4.10.85 SupportUnreadAlertCategory as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SupportUnreadAlertCategory characteristic UUID.

4.10.86 SystemId as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined SystemId characteristic UUID.

4.10.87 TemperatureMeasurement as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Temperature Measurement Characteristic UUID.

4.10.88 TemperatureType as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Temperature Type Characteristic UUID.

4.10.89 TimeAccuracy as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeAccuracy characteristic UUID.

4.10.90 TimeSource as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeSource characteristic UUID.

4.10.91 TimeUpdateControlPoint as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeUpdateControlPoint characteristic UUID.

4.10.92 TimeUpdateState as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeUpdateState characteristic UUID.

4.10.93 TimeWithDst as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeWithDst characteristic UUID.

4.10.94 TimeZone as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TimeZone characteristic UUID.

4.10.95 TxPowerLevel as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TxPowerLevel characteristic UUID.

4.10.96 UnreadAlertStatus as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined UnreadAlertStatus characteristic UUID.

4.10.97 WriteClientCharacteristicConfigurationDescriptorAsync(ClientCharacteristicConfigurationDescriptorValue as Integer)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Writes client characteristic configuration descriptor.
Example:

```
Dim Characteristic As WindowsGattCharacteristicMBS // your characteristic

dim Mode as integer = _
WindowsGattReadClientCharacteristicConfigurationDescriptorResultMBS.ConfigurationDescriptorValueNotify + _
WindowsGattReadClientCharacteristicConfigurationDescriptorResultMBS.ConfigurationDescriptorValueIndicate
Characteristic.WriteClientCharacteristicConfigurationDescriptorAsync Mode
```

Notes: Writes the ClientCharacteristicConfigurationDescriptor to the Bluetooth LE device, and if the value to be written represents an indication or a notification and a ValueChanged event handler is registered, enables receiving ValueChanged events from the device.

Pass the new value for the ClientCharacteristicConfigurationDescriptor of this Characteristic object.

Calls WriteClientCharacteristicConfigurationDescriptorAsyncCompleted later.

4.10.98 WriteClientCharacteristicConfigurationDescriptorWithResultAsync(ClientCharacteristicConfigurationDescriptorValue as Integer)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Writes client characteristic configuration descriptor.
Example:

```
dim Characteristic as WindowsGattCharacteristicMBS
// your characteristic from e.g. CharacteristicsCompleted event

Characteristic.WriteClientCharacteristicConfigurationDescriptorAsync(1)
```

Notes: Writes the ClientCharacteristicConfigurationDescriptor to the Bluetooth LE device, and if the value to be written represents an indication or a notification and a ValueChanged event handler is registered, enables receiving ValueChanged events from the device.

Please pass the new value for the ClientCharacteristicConfigurationDescriptor of this WindowsGattCharacteristicMBS object.

Calls WriteClientCharacteristicConfigurationDescriptorWithResultAsyncCompleted event later.

4.10.99 WriteValueAsync(buffer as MemoryBlock)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value write to a Bluetooth LE device.
Notes: Calls WriteValueAsyncCompleted event later.
See also:

- 4.10.100 WriteValueAsync(buffer as MemoryBlock, WriteOption as Integer) 114

4.10.100 WriteValueAsync(buffer as MemoryBlock, WriteOption as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value write to a Bluetooth LE device.
Example:

```
Var mb As New MemoryBlock(6)
mb.Byte(0) = &H01 // Data Byte
```

```
mb.Byte(1) = &HAA
mb.Byte(2) = &H55
mb.Byte(3) = &HAA
mb.Byte(4) = &H55
mb.Byte(5) = &HAA

Characteristics(0).WriteValueAsync(mb, GattCharacteristic.WriteWithResponse)
```

Notes: WriteOption is either WriteWithResponse or WriteWithoutResponse.
Calls WriteValueAsyncCompleted event later.
See also:

- 4.10.99 WriteValueAsync(buffer as MemoryBlock) 114

4.10.101 WriteValueWithResultAsync(buffer as MemoryBlock)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value write to a Bluetooth LE device.
Notes: Calls WriteValueWithResultAsyncCompleted event later.
See also:

- 4.10.102 WriteValueWithResultAsync(buffer as MemoryBlock, WriteOption as Integer) 115

4.10.102 WriteValueWithResultAsync(buffer as MemoryBlock, WriteOption as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Characteristic Value write to a Bluetooth LE device.
Notes: Calls WriteValueWithResultAsyncCompleted event later.
See also:

- 4.10.101 WriteValueWithResultAsync(buffer as MemoryBlock) 115

4.10.103 Properties

4.10.104 AttributeHandle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the handle used to uniquely identify GATT-based characteristic attributes as declared on the Bluetooth LE device.
Notes: (Read only property)

4.10.105 CharacteristicProperties as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the GATT characteristic properties, as defined by the GATT profile.
Notes: If the ExtendedProperties flag is present it also represents the properties of the Extended Characteristic Properties Descriptor.
(Read only property)

4.10.106 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.10.107 ProtectionLevel as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the desired GATT security options for over the air communication with the device.
Notes: Windows will negotiate the maximum security possible with the device as part of the pairing process, and specifying a lower level of security won,Äôt degrade the existing security level.
(Read and Write property)

4.10.108 Service as WindowsGattDeviceServiceMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The GattDeviceService of which this characteristic is a member.
Notes: (Read only property)

4.10.109 UserDescription as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Get the user friendly description for this GattCharacteristic, if the User Description Descriptor is present, otherwise this will be an empty string.
Notes: (Read only property)

4.10.110 UUID as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the GATT Characteristic UUID for this GattCharacteristic.
Notes: (Read only property)

4.10.111 Events

4.10.112 DescriptorsCompleted(asyncStatus as Integer, Result as WindowsGattDescriptorsResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by GetDescriptorsForUuidAsync or GetDescriptorsAsync methods when completed.
Example:

```
Sub DescriptorsCompleted(asyncStatus as Integer, Result as WindowsGattDescriptorsResultMBS) Handles
DescriptorsCompleted
Log CurrentMethodName

If result <>Nil Then
Dim Descriptors() As WindowsGattDescriptorMBS = result.Descriptors

For Each Descriptor As WindowsGattDescriptorMBS In Descriptors
Log "Descriptor for attribute "+Descriptor.AttributeHandle.ToString+" has "+Descriptor.UUID
Next

End If
End Sub
```

4.10.113 ReadClientCharacteristicConfigurationDescriptorAsyncCompleted(asyncStatus as Integer, Result as WindowsGattReadClientCharacteristicConfigurationDescriptorResultMBS)

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: The event called by ReadClientCharacteristicConfigurationDescriptorAsync method.

4.10.114 ReadValueAsyncCompleted(asyncStatus as Integer, Result as WindowsGattReadResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called when ReadValueAsync methods finished.

4.10.115 ValueChanged(args as WindowsGattValueChangedEventArgsMBS)

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: The event called when value changed.
Notes: An App can register an event handler in order to receive events when notification or indications are received from a device, after setting the Client Characteristic Configuration Descriptor.

The WindowsGattValueChangedEventArgsMBS object represents the arguments received by a ValueChanged event handler used to process characteristic value change notification and indication events sent by a Bluetooth LE device.

To get this event working, you need to use the copy constructor to create a new instance of your WindowsGattCharacteristicMBS subclass.

4.10.116 WriteClientCharacteristicConfigurationDescriptorAsyncCompleted(asyncStatus as Integer, Status as Integer)

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: The event called by WriteClientCharacteristicConfigurationDescriptorAsync method.

4.10.117 WriteClientCharacteristicConfigurationDescriptorWithResultAsyncCompleted(asyncStatus as Integer, Result as WindowsGattWriteResultMBS)

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: The event called by WriteClientCharacteristicConfigurationDescriptorWithResultAsync method.

4.10.118 WriteValueAsyncCompleted(asyncStatus as Integer, Result as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by WriteValueAsync methods when completed.

4.10.119 WriteValueWithResultAsyncCompleted(asyncStatus as Integer, Result as WindowsGattWriteResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by WriteValueWithResultAsync methods when completed.

4.10.120 Constants

Cache Modes

Constant	Value	Description
CacheModeCached	0	Cached data.
CacheModeUncached	1	Uncached data.

GATT characteristic properties

Constant	Value	Description
PropertiesAuthenticatedSignedWrites	&h40	The characteristic supports signed writes.
PropertiesBroadcast	1	The characteristic supports broadcasting.
PropertiesExtendedProperties	&h80	The ExtendedProperties Descriptor is present.
PropertiesIndicate	&h20	The characteristic is indicatable.
PropertiesNone	0	The characteristic doesn,Äôt have any properties that apply.
PropertiesNotify	&h10	The characteristic is notifiable.
PropertiesRead	2	The characteristic is readable.
PropertiesReliableWrites	&h100	The characteristic supports reliable writes.
PropertiesWritableAuxiliaries	&h200	The characteristic has writable auxiliaries.
PropertiesWrite	8	The characteristic is writable.
PropertiesWriteWithoutResponse	4	The characteristic supports Write Without Response.

Protection Levels

Constant	Value	Description
ProtectionLevelAuthenticationRequired	1	Require the link to be authenticated.
ProtectionLevelEncryptionAndAuthenticationRequired	3	Require the link to be encrypted and authenticated.
ProtectionLevelEncryptionRequired	2	Require the link to be encrypted.
ProtectionLevelPlain	0	Uses the default protection level.

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

Write Options

Constant	Value	Description
WriteWithoutResponse	1	The Write Without Response procedure shall be used.
WriteWithResponse	0	The default GATT write procedure shall be used.

4.11 class WindowsGattCharacteristicsResultMBS

4.11.1 class WindowsGattCharacteristicsResultMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Contains the result of GetCharacteristicsForUuidAsync and GetCharacteristicsAsync.
Notes: See WindowsGattDeviceServiceMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr3

4.11.2 Methods

4.11.3 Characteristics as WindowsGattCharacteristicMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the characterisitics.

4.11.4 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.11.5 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.11.6 Properties

4.11.7 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.11.8 ProtocolError as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.11.9 Status as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: (Read only property)

4.11.10 Constants

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

4.12 class WindowsGattDescriptorMBS

4.12.1 class WindowsGattDescriptorMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a Descriptor of a GATT Characteristic.
Notes: The GattDescriptor object represents a GATT Descriptor of a particular characteristic, and is obtained from the Descriptors property of the GattCharacteristic object.
Blog Entries

- The Top 10 from the MBS Xojo Plugins in 2022
- News from the MBS Xojo Plugins Version 22.3
- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr6
- MBS Xojo Plugins, version 22.3pr5

4.12.2 Methods

4.12.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.12.4 Constructor(other as WindowsGattDescriptorMBS) 123

4.12.4 Constructor(other as WindowsGattDescriptorMBS)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Copy constructor.
See also:

- 4.12.3 Constructor 123

4.12.5 ConvertShortIdToUuid(ID as UInt16) as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Converts a Bluetooth SIG defined short Id to a full GATT UUID.

4.12.6 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.12.7 ReadValueAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Descriptor Value read from a value cache maintained by Windows.
Notes: Calls ReadValueAsyncCompleted event later when done.

4.12.8 WriteValueAsync(buffer as MemoryBlock)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Descriptor Value write to a Bluetooth LE device.
Notes: Buffer: the data to be written to the Bluetooth LE device.

Calls WriteValueAsyncCompleted event later.

4.12.9 WriteValueWithResultAsync(buffer as MemoryBlock)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Performs a Descriptor Value write to a Bluetooth LE device.
Notes: Buffer: the data to be written to the Bluetooth LE device.

Calls WriteValueWithResultAsyncCompleted event later.

4.12.10 Properties

4.12.11 AttributeHandle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the GATT Attribute handle used to uniquely identify this attribute on the GATT Server Device.

Notes: (Read only property)

4.12.12 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.12.13 ProtectionLevel as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the desired GATT security options for over the air communication with the device.
Notes: Windows will negotiate the maximum security possible with the device as part of the pairing process, and specifying a lower level of security won,Äôt degrade the existing security level.

(Read only property)

4.12.14 UUID as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the GATT Descriptor UUID for this GattDescriptor.
Notes: (Read only property)

4.12.15 Events

4.12.16 ReadValueAsyncCompleted(asyncStatus as Integer, Result as WindowsGattReadResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by ReadValueAsync method when completed.

4.12.17 WriteValueAsyncCompleted(asyncStatus as Integer, Result as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by WriteValueAsync method when completed.

4.12.18 WriteValueWithResultAsyncCompleted(asyncStatus as Integer, Result as WindowsGattWriteResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event called by WriteValueWithResultAsync method when completed.

4.12.19 Constants

Protection Levels

Constant	Value	Description
ProtectionLevelAuthenticationRequired	1	Require the link to be authenticated.
ProtectionLevelEncryptionAndAuthenticationRequired	3	Require the link to be encrypted and authenticated.
ProtectionLevelEncryptionRequired	2	Require the link to be encrypted.
ProtectionLevelPlain	0	Uses the default protection level.

4.13 class WindowsGattDescriptorsResultMBS

4.13.1 class WindowsGattDescriptorsResultMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The status of GetDescriptorsForUuidAsync and GetDescriptorsAsync.
Notes: See WindowsGattCharacteristicMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr6
- MBS Xojo Plugins, version 22.3pr5

4.13.2 Methods

4.13.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.13.4 Descriptors as WindowsGattDescriptorMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the descriptors.
Notes: See WindowsGattDescriptorMBS class.

4.13.5 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.13.6 Properties

4.13.7 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.13.8 ProtocolError as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.13.9 Status as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: (Read only property)

4.13.10 Constants

Constants

Constant	Value	Description
StatusAccessDenied	3	One of the status values. Access is denied.
StatusProtocolError	2	One of the status values. There was a GATT communication protocol error.
StatusSuccess	0	One of the status values. The operation completed successfully.
StatusUnreachable	1	One of the status values. No communication can be performed with the device, at this time.

4.14 class WindowsGattDeviceServiceMBS

4.14.1 class WindowsGattDeviceServiceMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a GATT Primary Service on a Bluetooth device.
Notes: The GattDeviceService class represents a GATT service on a Bluetooth LE device. It is instantiated by using a device service instance path, obtained by finding a device using the Windows.Devices.Enumeration API.
Blog Entries

- News from the MBS Xojo Plugins Version 23.3
- MBS Xojo Plugins, version 23.3pr2
- News from the MBS Xojo Plugins in Version 23.0
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.0
- The Top 10 from the MBS Xojo Plugins in 2022
- Bluetooth LE on Windows
- MBS Xojo Plugins, version 22.6pr1
- News from the MBS Xojo Plugins Version 22.5
- News from the MBS Xojo Plugins Version 22.3
- MBS Xojo Plugins in version 22.3

Xojo Developer Magazine

- 21.3, page 10: News
- 21.2, page 9: News

4.14.2 Methods

4.14.3 AlertNotification as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined AlertNotification Service UUID.

4.14.4 Battery as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Battery Service UUID.

4.14.5 BloodPressure as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Blood Pressure Service UUID.

4.14.6 Characteristics(characteristicUUID as String) as WindowsGattDeviceServiceMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns a vector of characteristics, that are identified by the specified UUID and belong to this GattDeviceService instance.

4.14.7 Close

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Releases the resources associated with the GattDeviceService class.
Notes: This allows other apps to access the resources of the GattDeviceService in question. A GattDeviceService object should not be used after Close is invoked, instead a new GattDeviceService object should be instantiated using the FromIdAsync method.

4.14.8 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.14.9 Constructor(other as WindowsGattDeviceServiceMBS) 130

4.14.9 Constructor(other as WindowsGattDeviceServiceMBS)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
Notes: Creates a new Xojo object pointing to same device service.
See also:

- 4.14.8 Constructor 130

4.14.10 CurrentTime as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CurrentTime service UUID.

4.14.11 CyclingPower as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined CyclingPower service UUID.

4.14.12 CyclingSpeedAndCadence as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Cycling Speed And Cadence Service UUID.

4.14.13 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.14.14 DeviceInformation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined DeviceInformation service UUID.

4.14.15 FromId(Id as String) as WindowsGattDeviceServiceMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Instantiates a new GattDeviceService from the device ID.
Notes: Synchronous version, which may blocks the application until the function finished.
See also:

- 4.14.16 FromId(Id as String, sharingMode as Integer) as WindowsGattDeviceServiceMBS 132

4.14.16 FromId(Id as String, sharingMode as Integer) as WindowsGattDeviceServiceMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Instantiates a new GattDeviceService from the device ID.
Notes: Synchronous version, which may blocks the application until the function finished.
See also:

- 4.14.15 FromId(Id as String) as WindowsGattDeviceServiceMBS 131

4.14.17 FromIdAsync(Id as String, delegateHandler as ServiceFromIdAsyncCompletedMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Instantiates a new GattDeviceService from the device ID.
Notes: Id: The GATT device ID.
See also:

- 4.14.18 FromIdAsync(Id as String, sharingMode as Integer, delegateHandler as ServiceFromIdAsyncCompletedMBS) 132

4.14.18 FromIdAsync(Id as String, sharingMode as Integer, delegateHandler as ServiceFromIdAsyncCompletedMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Instantiates a new GattDeviceService object from the device ID.
Notes: deviceId: The GATT device ID.
sharingMode: The sharing mode of the GATT device.
See also:

- 4.14.17 FromIdAsync(Id as String, delegateHandler as ServiceFromIdAsyncCompletedMBS) 132

4.14.19 GenericAccess as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined UUID for the Generic Access Service.

4.14.20 GenericAttribute as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined UUID for the Generic Attribute Service.

4.14.21 GetAllCharacteristics as WindowsGattCharacteristicMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the collection of all characteristics belonging to this GattDeviceService instance.

4.14.22 GetAllIncludedServices as WindowsGattDeviceServiceMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the collection of all included services belonging to this GattDeviceService instance.

4.14.23 GetCharacteristicsAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the characteristics that are part of this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattCharacteristicsResultMBS object and calls CharacteristicsCompleted event later.

An asynchronous operation that completes with a GattCharacteristicsResult object and calls CharacteristicsCompleted event later.
See also:

- 4.14.24 GetCharacteristicsAsync(BluetoothCacheMode as Integer) 133

4.14.24 GetCharacteristicsAsync(BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the characteristics that are part of this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattCharacteristicsResultMBS

object and calls CharacteristicsCompleted event later.

For BluetoothCacheMode pass CacheModeUncached or CacheModeCached.
See also:

- 4.14.23 GetCharacteristicsAsync 133

4.14.25 GetCharacteristicsForUuidAsync(characteristicUuid as String)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the characterisitics that are part of this GattDeviceService instance and associated with the characteristicUuid.
Notes: Creates an asynchronous operation that completes with a WindowsGattCharacteristicsResultMBS object and calls CharacteristicsCompleted event later.

For BluetoothCacheMode pass CacheModeUncached or CacheModeCached.
See also:

- 4.14.26 GetCharacteristicsForUuidAsync(characteristicUuid as String, BluetoothCacheMode as Integer) 134

4.14.26 GetCharacteristicsForUuidAsync(characteristicUuid as String, BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the characterisitics that are part of this GattDeviceService instance and associated with the characteristicUuid.
Notes: Creates an asynchronous operation that completes with a WindowsGattCharacteristicsResultMBS object and calls CharacteristicsCompleted event later.

For BluetoothCacheMode pass CacheModeUncached or CacheModeCached.
See also:

- 4.14.25 GetCharacteristicsForUuidAsync(characteristicUuid as String) 134

4.14.27 GetDeviceSelectorFromShortId(serviceShortId as UInt16) as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a suitable AQS Filter string for use with the CreateWatcher method, from a 16-bit Bluetooth GATT Service UUID.

Notes: serviceShortId: A 16-bit Bluetooth GATT Service UUID.

4.14.28 GetDeviceSelectorFromUuid(serviceUuid as String) as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a suitable AQS Filter string for use with the CreateWatcher method, from a Bluetooth service UUID.
Notes: serviceUuid: A 128-bit Bluetooth GATT Service UUID, represented as a standard GUID object.

4.14.29 GetIncludedServicesAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the included services that are associated with this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattDeviceServicesResultMBS object.
See also:

- 4.14.30 GetIncludedServicesAsync(BluetoothCacheMode as Integer) 135

4.14.30 GetIncludedServicesAsync(BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the included services that are associated with this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattDeviceServicesResultMBS object.

For BluetoothCacheMode pass CacheModeUncached or CacheModeCached.
See also:

- 4.14.29 GetIncludedServicesAsync 135

4.14.31 GetIncludedServicesForUuidAsync(serviceUuid as String)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the included services from the serviceUuid that is associated with this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattDeviceServicesResultMBS object.

serviceUuid: A 128-bit Bluetooth GATT Service UUID, represented as a standard GUID object.
See also:

- 4.14.32 GetIncludedServicesForUuidAsync(serviceUuid as String, BluetoothCacheMode as Integer) 136

4.14.32 GetIncludedServicesForUuidAsync(serviceUuid as String, BluetoothCacheMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the included services from the serviceUuid that is associated with this GattDeviceService instance.
Notes: Creates an asynchronous operation that completes with a WindowsGattDeviceServicesResultMBS object.

serviceUuid: A 128-bit Bluetooth GATT Service UUID, represented as a standard GUID object.
See also:

- 4.14.31 GetIncludedServicesForUuidAsync(serviceUuid as String) 135

4.14.33 Glucose as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Glucose Service UUID.

4.14.34 HealthThermometer as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Health Thermometer Service UUID.

4.14.35 HeartRate as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Heart Rate Service UUID.

4.14.36 HumanInterfaceDevice as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined HumanInterfaceDevice service UUID.

4.14.37 ImmediateAlert as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ImmediateAlert service UUID.

4.14.38 LinkLoss as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LinkLoss service UUID.

4.14.39 LocationAndNavigation as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined LocationAndNavigation service UUID.

4.14.40 NextDstChange as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined NextDstChange service UUID.

4.14.41 OpenAsync(SharingMode as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Opens the GATT device service with the specified sharingMode.
Notes: Calls OpenAsyncCompleted later with result.

4.14.42 ParentServices as WindowsGattDeviceServiceMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the read-only list of parent services for this service.
Notes: A read-only list of parent services from which this object is derived, if this GattDeviceService is an included service; Otherwise, nil.

4.14.43 PhoneAlertStatus as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined PhoneAlertStatus service UUID.

4.14.44 ReferenceTimeUpdate as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ReferenceTimeUpdate service UUID.

4.14.45 RequestAccessAsync

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Requests access to the GattDeviceService.
Notes: An asynchronous operation that completes with RequestAccessCompleted event.

4.14.46 RunningSpeedAndCadence as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined Running Speed And Cadence Service UUID.

4.14.47 ScanParameters as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined ScanParameters service UUID.

4.14.48 TxPower as String

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Bluetooth SIG-defined TxPower service UUID.

4.14.49 Properties

4.14.50 AttributeHandle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the handle used to uniquely identify GATT-based service attributes as declared on the Bluetooth LE device.
Notes: Handle to uniquely identify GATT-based service attributes.
(Read only property)

4.14.51 Device as WindowsBluetoothLEDeviceMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the BluetoothLEDevice object describing the device associated with the current GattDeviceService object.
Notes: (Read only property)

4.14.52 DeviceId as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Get the string that represents the GATT service instance path used to instantiate the GattDeviceService.
Notes: (Read only property)

4.14.53 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.14.54 Session as WindowsGattSessionMBS

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the session for this GATT device service instance.
Notes: (Read only property)

4.14.55 SharingMode as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the sharing mode for this GATT device service instance.
Notes: (Read only property)

4.14.56 UUID as String

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the GATT Service UUID associated with this GattDeviceService.
Notes: A 128-bit Bluetooth GATT Service UUID, represented as a standard GUID object.
(Read only property)

4.14.57 Events

4.14.58 CharacteristicsCompleted(asyncStatus as Integer, Result as WindowsGattCharacteristicsResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The GetCharacteristicsAsync* functions completed.

4.14.59 IncludedServicesCompleted(asyncStatus as Integer, Result as WindowsGattDeviceServicesResultMBS)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: Event called when GetIncludedServices*Async method completes.
Example:

```
Sub IncludedServicesCompleted(asyncStatus as Integer, Result as WindowsGattDeviceServicesResultMBS)
Handles IncludedServicesCompleted
Log CurrentMethodName

if Result <>nil then
dim services() as WindowsGattDeviceServiceMBS = Result.Services
```

```
For Each Service As WindowsGattDeviceServiceMBS In Services
Log "Found service: "+Service.UUID+" Sharing Mode:"+Service.SharingMode.toText
next
end If
End Sub
```

4.14.60 OpenAsyncCompleted(asyncStatus as Integer, OpenStatus as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event for completed OpenAsync call.

4.14.61 RequestAccessCompleted(asyncStatus as Integer, DeviceAccessStatus as Integer)

Plugin Version: 22.3, Platform: Windows, Targets: .

Function: The event for RequestAccessAsync method completion.

4.14.62 Constants

Cache Modes

Constant	Value	Description
CacheModeCached	0	Cached data.
CacheModeUncached	1	Uncached data.

Open Status Codes

Constant	Value	Description
OpenStatusAccessDenied	5	Access is denied.
OpenStatusAlreadyOpened	2	The GATT device service is already opened.
OpenStatusNotFound	3	The GATT device service was not found.
OpenStatusSharingViolation	4	There was a sharing violation.
OpenStatusSuccess	1	The GATT device service was successfully opened.
OpenStatusUnspecified	0	Unspecified error.

Sharing Modes

Constant	Value	Description
SharingModeExclusive	1	The sharing mode is exclusive.
SharingModeSharedReadAndWrite	3	The sharing mode is read and write.
SharingModeSharedReadOnly	2	The sharing mode is read only.
SharingModeUnspecified	0	The sharing mode is unspecified.

4.14.63 Delegates

4.14.64 ServiceFromIdAsyncCompletedMBS(AsyncStatus as Integer, Device as WindowsGattDeviceServiceMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate to be called by one of the FromIdAsync methods.

4.15 class WindowsGattDeviceServicesResultMBS

4.15.1 class WindowsGattDeviceServicesResultMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The status of GetIncludedServicesForUuidAsync and GetIncludedServicesForUuidAsync.
Notes: See WindowsGattDeviceServiceMBS class.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Bluetooth LE on Windows
- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr3

4.15.2 Methods

4.15.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.15.4 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.15.5 Services as WindowsGattDeviceServiceMBS()

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the services.
Notes: See WindowsGattDeviceServiceMBS class.

4.15.6 Properties

4.15.7 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.15.8 ProtocolError as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.15.9 Status as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: (Read only property)

4.15.10 Constants

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

4.16 class WindowsGattReadClientCharacteristicConfigurationDescriptorResultMBS

4.16.1 class WindowsGattReadClientCharacteristicConfigurationDescriptorResultMBS

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents the result of reading a GATT Client CharacteristicConfigurationClientDescriptor value.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins in Version 23.0

4.16.2 Methods

4.16.3 Constructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.16.4 Destructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.16.5 Properties

4.16.6 ClientCharacteristicConfigurationDescriptor as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents the value of the GATT ClientCharacteristicConfigurationDescriptor.
Notes: (Read only property)

4.16.7 Handle as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.16.8 ProtocolError as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.16.9 Status as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: See Status* constants in WindowsGattCharacteristicMBS class.
(Read only property)

4.16.10 Constants

Client Characteristic Configuration descriptor

Constant	Value	Description
ConfigurationDescriptorValueIndicate	2	Characteristic indications are enabled.
ConfigurationDescriptorValueNone	0	Neither notification nor indications are enabled.
ConfigurationDescriptorValueNotify	1	Characteristic notifications are enabled.

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

4.17 class WindowsGattReadRequestMBS

4.17.1 class WindowsGattReadRequestMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: This class represents a Bluetooth GATT read request.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr1

4.17.2 Methods

4.17.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.17.4 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.17.5 Properties

4.17.6 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.17.7 Length as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the buffer length of the read request.
Notes: (Read only property)

4.17.8 Offset as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The read request offset.
Notes: (Read only property)

4.17.9 State as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The read request state.
Notes: (Read only property)

4.17.10 Constants

GATT request state

Constant	Value	Description
StateCanceled	2	The request is canceled.
StateCompleted	1	The request if completed.
StatePending	0	The request is pending.

4.18 class WindowsGattReadResultMBS

4.18.1 class WindowsGattReadResultMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents the result of an asynchronous read operation of a GATT Characteristic or Descriptor value.
Notes: One of the ReadValueAsync methods is used to retrieve a GattReadResult object.
The Status property on the GattReadResult returned indicates if the result of the operation was successful.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr1

4.18.2 Methods

4.18.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.18.4 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.18.5 Properties

4.18.6 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.18.7 ProtocolError as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.18.8 Status as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: (Read only property)

4.18.9 Value as MemoryBlock

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the value read from the device.
Notes: (Read only property)

4.18.10 Constants

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

4.19 class WindowsGattSessionMBS

4.19.1 class WindowsGattSessionMBS

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a Generic Attribute Profile (GATT) session.
Blog Entries

- News from the MBS Xojo Plugins Version 23.3
- MBS Xojo Plugins, version 23.3pr2
- News from the MBS Xojo Plugins in Version 23.0
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.0
- MBS Xojo Plugins, version 22.6pr1

Xojo Developer Magazine

- 21.3, page 10: News
- 21.2, page 9: News

4.19.2 Methods

4.19.3 Close

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Closes the GattSession.

4.19.4 Constructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 4.19.5 Constructor(other as WindowsGattSessionMBS) 151

4.19.5 Constructor(other as WindowsGattSessionMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
See also:

- 4.19.4 Constructor 151

4.19.6 Destructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.19.7 FromDeviceId(deviceId as WindowsBluetoothDeviceIdMBS) as WindowsGattSessionMBS

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new GattSession object from the specified deviceId.
Notes: Synchronous version, which may blocks the application until the function finished.

4.19.8 FromDeviceIdAsync(deviceId as WindowsBluetoothDeviceIdMBS, delegateHandler as FromDeviceIdAsyncCompletedMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new GattSession object from the specified deviceId.
Example:

```
// you got a device ID as string
Dim WinDeviceID As New WindowsBluetoothDeviceIdMBS(DeviceID)

// and now wait for callback
WindowsGattSessionMBS.FromDeviceIdAsync(WinDeviceID, AddressOf FromIDAsyncCompleted)
```

Notes: Later calls FromDeviceIdAsyncCompletedMBS event.

4.19.9 Properties

4.19.10 CanMaintainConnection as Boolean

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a Boolean value that indicates whether the connection can be maintained.
Notes: (Read only property)

4.19.11 DeviceId as WindowsBluetoothDeviceIdMBS

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the device ID.
Notes: (Read only property)

4.19.12 Handle as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.19.13 MaintainConnection as Boolean

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets a Boolean value that indicates whether the connection should be maintained.
Notes: Value is true if the connection should be maintained, otherwise false. false by default.

If GattSession.MaintainConnection is set to true, then the system waits indefinitely for a connection, and it will connect when the device is available. There's nothing for your application to wait on, since GattSession.MaintainConnection is a property.
(Read and Write property)

4.19.14 MaxPduSize as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum protocol data unit (PDU) size.
Notes: This metric is also known as the maximum transmission unit (MTU) size.

The Windows operating system automatically fragments down larger protocol data unit (PDU) sizes sent to a remote device (wherever supported by the Bluetooth GATT/ATT spec). So under normal circumstances, there's no need for you to know the maximum transmission unit (MTU) size at the application layer if your application's goal is just to send data efficiently.

You can send large amounts of data, and it will be fragmented automatically by the OS using the MTU. Your application is not limited by the MTU size as to the data transfer of each packet.
If you want your application to customize the data sent based on the MTU (for example, encoding/codec), or to communicate the MTU size information out-of-band, then you can access the the MTU value using MaxPduSize and GattSession.MaxPduSizeChanged.
(Read only property)

4.19.15 SessionStatus as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the session status.
Notes: (Read only property)

4.19.16 Events

4.19.17 MaxPduSizeChanged

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: An event that is raised when the maximum protocol data unit (PDU) size changes.
Notes: The PDU is also known as the maximum transmission unit (MTU).

MaxPduSizeChanged is raised whenever the negotiated MTU for the Attribute Protocol (ATT) is changed. And that can be changed or negotiated by a remote Bluetooth peripheral. As a developer, you can't change the value used by Windows itself, since that's fully managed by the operating system.
Also see the GattSession.MaxPduSize property which, as mentioned, is read-only.

4.19.18 SessionStatusChanged

Plugin Version: 23.0, Platform: Windows, Targets: .

Function: An event that is triggered when the GATT session status has changed.

4.19.19 Constants

Status

Constant	Value	Description
StatusActive	1	The GATT session is active.
StatusClosed	0	The GATT session is closed.

4.19.20 Delegates

4.19.21 FromDeviceIdAsyncCompletedMBS(AsyncStatus as Integer, session as WindowsGattSessionMBS)

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Event called when a session was created.

4.20 class WindowsGattValueChangedEventArgsMBS

4.20.1 class WindowsGattValueChangedEventArgsMBS

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The value changed event arguments.
Notes: Represents the arguments received by a WindowsGattCharacteristicMBS.ValueChanged event handler used to process characteristic value change notification and indication events sent by a Bluetooth LE device.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins in Version 23.0

4.20.2 Methods

4.20.3 Constructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.20.4 Destructor

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.20.5 Properties

4.20.6 CharacteristicValue as MemoryBlock

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the new Characteristic Value.
Notes: (Read only property)

4.20.7 Handle as Integer

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.20.8 Timestamp as UInt64

Plugin Version: 23.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The time at which the system was notified of the Characteristic Value change.
Example:

```
// convert value to time.
Dim e as WindowsGattValueChangedEventArgsMBS // your object
Dim value As Double = e.Timestamp / 10000000.0
Dim d As New DateTime(1601, 1, 1, 0, 0, 0, 0)

d = New DateTime(d.SecondsFrom1970 + value)

MessageBox d.ToString
```

Notes: (Read only property)

4.21 class WindowsGattWriteRequestMBS

4.21.1 class WindowsGattWriteRequestMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: This class represents a GATT write request.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr1

4.21.2 Methods

4.21.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.21.4 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.21.5 Properties

4.21.6 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.21.7 Offset as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the offset.
Notes: (Read only property)

4.21.8 Option as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the write request option.
Notes: See OptionWriteWithResponse and OptionWriteWithoutResponse.
(Read only property)

4.21.9 State as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the state of the write request.
Notes: (Read only property)

4.21.10 Value as MemoryBlock

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the buffer value of the write request.
Notes: (Read only property)

4.21.11 Constants

Options

Constant	Value	Description
OptionWriteWithoutResponse	1	The Write Without Response procedure shall be used.
OptionWriteWithResponse	0	The default GATT write procedure shall be used.

GATT request state

Constant	Value	Description
StateCanceled	2	The request is canceled.
StateCompleted	1	The request if completed.
StatePending	0	The request is pending.

4.22 class WindowsGattWriteResultMBS

4.22.1 class WindowsGattWriteResultMBS

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Contains the result of GATT write operations like WriteValueWithResultAsync.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins in version 22.3
- MBS Xojo Plugins, version 22.3pr1

4.22.2 Methods

4.22.3 Constructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

4.22.4 Destructor

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

4.22.5 Properties

4.22.6 Handle as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

4.22.7 ProtocolError as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the protocol error.
Notes: The plugin returns value if this property is not set.
(Read only property)

4.22.8 Status as Integer

Plugin Version: 22.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the status of an asynchronous operation.
Notes: (Read only property)

4.22.9 Constants

Status Values

Constant	Value	Description
StatusAccessDenied	3	Access is denied.
StatusProtocolError	2	There was a GATT communication protocol error.
StatusSuccess	0	The operation completed successfully.
StatusUnreachable	1	No communication can be performed with the device, at this time.

Chapter 5

Navigation

5.1 class WinFileDialogExceptionMBS

5.1.1 class WinFileDialogExceptionMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The class for an error exception in our WinFileDialog classes.
Notes: Subclass of the RuntimeException class.
Blog Entries

- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

5.2 class WinFileDialogMBS

5.2.1 class WinFileDialogMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The class for a file dialog.
Notes: All methods may raise WinFileDialogExceptionMBS in case of errors.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

Xojo Developer Magazine

- 18.3, page 10: News

5.2.2 Methods

5.2.3 AddCheckButton(ControlID as Integer, label as String, Checked as boolean = false)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a check button (check box) to the dialog.
Notes: ControlID: The ID of the check button to add.
Label: the button text.
Checked: A boolean indicating the current state of the check button. True if checked; false otherwise.

The default state for this control is enabled and visible.

5.2.4 AddComboBox(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a combo box to the dialog.
Notes: ControlID: The ID of the combo box to add.

The default state for this control is enabled and visible.

5.2.5 AddControlItem(ControlID as Integer, ItemID as Integer, Label as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds an item to a container control in the dialog.
Notes: ControlID: The ID of the container control to which the item is to be added.
ItemID: The ID of the item.
Label: The item's text, which can be either a label or, in the case of a drop-down list, the item itself.

The default state for this item is enabled and visible. Items in control groups cannot be changed after they have been created, with the exception of their enabled and visible states.
Container controls include option button groups, combo boxes, drop-down lists on the Open or Save button, and menus.

5.2.6 AddEditBox(ControlID as Integer, Text as String = "")

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds an edit box control to the dialog.
Notes: ControlID: The ID of the edit box to add.
Text: The default text displayed in the edit box.

The default state for this control is enabled and visible.
To add a label next to the edit box, place it in a visual group with StartVisualGroup.

5.2.7 AddMenu(ControlID as Integer, Label as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a menu to the dialog.
Notes: ControlID: The ID of the menu to add.
Label: The menu name.

The default state for this control is enabled and visible.
To add items to this control, use AddControlItem.

5.2.8 AddPlace(Item as WinShellItemMBS, top as boolean = false)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a folder to the list of places available for the user to open or save items.
Notes: Item: the folder to be made available to the user. This can only be a folder.
Top: Specifies where the folder is placed within the list. Pass true for top or false for bottom.

5.2.9 AddPushButton(ControlID as Integer, Label as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a button to the dialog.
Notes: ControlID: The ID of the button to add.
Label: the button text

The default state for this control is enabled and visible..

5.2.10 AddRadioButtonList(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds an option button (also known as radio button) group to the dialog.
Notes: ControlID: The ID of the option button group to add.
The default state for this control is enabled and visible.

5.2.11 AddSeparator(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds a separator to the dialog, allowing a visual separation of controls.
Notes: ControlID: The control ID of the separator.

The default state for this control is enabled and visible.

5.2.12 AddText(ControlID as Integer, Text as String = "")

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Adds text content to the dialog.

Notes: ControlID: The ID of the text to add.
Text: The text to show.

The default state for this control is enabled and visible.

5.2.13 ClearClientData

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Instructs the dialog to clear all persisted state information.
Notes: Persisted information can be associated with an application or a GUID. If a GUID was set by using SetClientGuid, that GUID is used to clear persisted information.

5.2.14 Close(cancel as boolean = false)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Closes the dialog.
Notes: Pass or false/true for cancel parameter to have that being returned by Show method.

An application can call this method from an event while the dialog is open. The dialog will close and the Show method will return with the result given by cancel parameter.

If this method is called, there is no result available for the Result or Results methods, and they will fail if called.

5.2.15 Constructor

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

5.2.16 EnableOpenDropDown(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Enables a drop-down list on the Open or Save button in the dialog.
Notes: ControlID: The ID of the drop-down list.

The Open or Save button label takes on the text of the first item in the drop-down. This overrides any label set by OkButtonLabel.
Use AddControlItem to add items to the drop-down.

5.2.17 EndVisualGroup

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Stops the addition of elements to a visual group in the dialog.

5.2.18 RemoveAllControlItems(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Removes all items from a container control in the dialog.
Notes: ControlID: The ID of the container control from which to remove the items.

Container controls include option button groups, combo boxes, drop-down lists on the Open or Save button, and menus.

5.2.19 RemoveControlItem(ControlID as Integer, ItemID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Removes an item from a container control in the dialog.
Notes: ControlID: The ID of the container control from which the item is to be removed.
ItemId: The ID of the item.

Container controls include option button groups, combo boxes, drop-down lists on the Open or Save button, and menus.

5.2.20 SetFileTypes(FileTypes() as WinFileTypeMBS)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The file types that the dialog can open or save.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
Dim FileTypes() As WinFileTypeMBS
```

```
FileTypes.Append New WinFileTypeMBS("JPEG image", "*.jpg")
FileTypes.Append New WinFileTypeMBS("PNG image", "*.png")
FileTypes.Append New WinFileTypeMBS("Tiff image", "*.tif;*.tiff")

d.SetFileTypes FileTypes
```

Notes: When using the Open dialog, the file types declared there are used to filter the view. When using the Save dialog, these values determine which file name extension is appended to the file name.
This method must be called before the dialog is shown and can only be called once for each dialog instance.
File types cannot be modified once the Common Item dialog box is displayed.

5.2.21 Show as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Launches the modal window.
Notes: Returns true on success or false on failure.
See also:

- 5.2.22 Show(parent as DesktopWindow) as Boolean 169
- 5.2.23 Show(parent as window) as Boolean 169

5.2.22 Show(parent as DesktopWindow) as Boolean

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Launches the modal window.
Notes: parent: The handle of the owner window. This value can be nil.
Returns true on success or false on failure.
See also:

- 5.2.21 Show as Boolean 169
- 5.2.23 Show(parent as window) as Boolean 169

5.2.23 Show(parent as window) as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Launches the modal window.
Notes: parent: The handle of the owner window. This value can be nil.

Returns true on success or false on failure.
See also:

- 5.2.21 Show as Boolean 169
- 5.2.22 Show(parent as DesktopWindow) as Boolean 169

5.2.24 StartVisualGroup(ControlID as Integer, label as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Declares a visual group in the dialog. Subsequent calls to any ”add” method add those elements to this group.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog

d.StartVisualGroup 1, ”Metadata”
d.AddText 2, ”Author:”
d.AddEditBox 3, CustomValue.Text
d.AddText 4, ”Subject:”
d.AddEditBox 5, ”Hello World”
d.EndVisualGroup
```

Notes: ControlID: The ID of the visual group.
Label: text that appears next to the visual group.

Controls will continue to be added to this visual group until you call EndVisualGroup.
A visual group can be hidden and disabled like any other control, except that doing so affects all of the controls within it. Individual members of the visual group can also be hidden and disabled singly.

5.2.25 Properties

5.2.26 ClientGuid as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The client GUID.
Notes: A dialog’s state can include factors such as the last visited folder and the position and size of the dialog.
Typically, this state is persisted based on the name of the executable file. By specifying a GUID, an application can have different persisted states for different versions of the dialog within the same application (for example, an import dialog and an open dialog).

SetClientGuid should be called immediately after creation of the dialog object.

Enables a calling application to associate a GUID with a dialog's persisted state.
(Read and Write property)

5.2.27 CurrentSelection as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The user's current selection in the dialog.
Notes: The item currently selected in the dialog. This item can be a file or folder selected in the view window, or something that the user has entered into the dialog's edit box. The latter case may require a parsing operation (cancelable by the user) that blocks the current thread.

If not result exists, the plugin returns nil and raises no failed exceptions.
(Read only property)

5.2.28 DefaultExtension as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The default extension to be added to file names.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.DefaultExtension = "jpg"
```

Notes: The extension text. This string should not include a leading period. For example, "jpg" is correct, while ".jpg" is not.

If this method is called before showing the dialog, the dialog will update the default extension automatically when the user chooses a new file type (see SetFileTypes).
(Read and Write property)

5.2.29 DefaultFolder as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The folder used as a default if there is not a recently used folder value available.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.DefaultFolder = New WinShellItemMBS(SpecialFolder.Desktop)
```

Notes: (Read and Write property)

5.2.30 FileName as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The text currently entered in the dialog's File name edit box.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.FileName = "New Document"
```

Notes: The text in the File name edit box does not necessarily reflect the item the user chose. To get the item the user chose, use Result property.

If not result exists, the plugin returns "" and raises no failed exceptions.
(Read and Write property)

5.2.31 FileNameLabel as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The text of the label next to the file name edit box.
Notes: (Read and Write property)

5.2.32 FileTypeIndex as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The currently selected file type.
Notes: The index of the selected file type in the file type array passed to SetFileTypes.

This is a one-based index rather than zero-based.
FileTypeIndex can be called either while the dialog is open or after it has closed.
(Read and Write property)

5.2.33 Folder as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: A folder that is always selected when the dialog is opened, regardless of previous user action.
Notes: Gets either the folder currently selected in the dialog, or, if the dialog is not currently displayed, the folder that is to be selected when the dialog is opened.

This folder overrides any "most recently used" folder. If this method is called while the dialog is displayed, it causes the dialog to navigate to the specified folder.
In general, we do not recommended the use of this method. If you call SetFolder before you display the dialog box, the most recent location that the user saved to or opened from is not shown. Unless there is a very specific reason for this behavior, it is not a good or expected user experience and should therefore be avoided. In almost all instances, SetDefaultFolder is the better method.

As of Windows 7, if the path of the folder specified through psi is the default path of a known folder, the known folder's current path is used in the dialog. That path might not be the same as the path specified in psi; for instance, if the known folder has been redirected. If the known folder is a library (virtual folders Documents, Music, Pictures, and Videos), the library's path is used in the dialog. If the specified library is hidden (as they are by default as of Windows 8.1), the library's default save location is used in the dialog, such as the Microsoft OneDrive Documents folder for the Documents library. Because of these mappings, the folder location used in the dialog might not be exactly as you specified when you called this method.
(Read and Write property)

5.2.34 Handle as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

5.2.35 OkButtonLabel as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The text of the Open or Save button.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OkButtonLabel = "Export"
```

Notes: (Read and Write property)

5.2.36 OptionAllNonStorageItems as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Enables the user to choose any item in the Shell namespace, not just those with SFGAO_STREAM or SFAGO_FILESYSTEM attributes. #
Notes: This flag cannot be combined with OptionForceFileSystem.
(Read and Write property)

5.2.37 OptionAllowMultiSelect as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Enables the user to select multiple items in the open dialog.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionAllowMultiSelect = true
```

Notes: Note that when this flag is set, the WinFileOpenDialogMBS class must be used to retrieve those items.
(Read and Write property)

5.2.38 OptionCreatePrompt as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Prompt for creation if the item returned in the save dialog does not exist.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionCreatePrompt = true
```

Notes: Note that this does not actually create the item.
(Read and Write property)

5.2.39 OptionDefaultNoMiniMode as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Indicates to the Save As dialog box that it should open in expanded mode.
Notes: Expanded mode is the mode that is set and unset by clicking the button in the lower-left corner of the Save As dialog box that switches between Browse Folders and Hide Folders when clicked. This value is not supported as of Windows 7.
(Read and Write property)

5.2.40 OptionDontAaddToRecent as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Do not add the item being opened or saved to the recent documents list.
Notes: (Read and Write property)

5.2.41 OptionFileMustExist as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The item returned must exist.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionFileMustExist = true
```

Notes: This is a default value for the Open dialog.
(Read and Write property)

5.2.42 OptionForceFileSystem as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Ensures that returned items are file system items.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionForceFileSystem = true
```

Notes: Note that this does not apply to items returned by CurrentSelection.

(Read and Write property)

5.2.43 OptionForcePreviewPaneOn as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Indicates to the Open dialog box that the preview pane should always be displayed.
Notes: (Read and Write property)

5.2.44 OptionForceShowHidden as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Include hidden and system items.
Notes: (Read and Write property)

5.2.45 OptionHideMRUPlaces as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Hide the list of places from which the user has recently opened or saved items. This value is not supported as of Windows 7.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionHideMRUPlaces = true
```

Notes: (Read and Write property)

5.2.46 OptionHidePinnedPlaces as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Hide items shown by default in the view's navigation pane.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionHidePinnedPlaces = true
```

Notes: This flag is often used in conjunction with the AddPlace method, to hide standard locations and replace them with custom locations.

Windows 7 and later. Hide all of the standard namespace locations (such as Favorites, Libraries, Computer, and Network) shown in the navigation pane.

Windows Vista. Hide the contents of the Favorite Links tree in the navigation pane. Note that the category itself is still displayed, but shown as empty.
(Read and Write property)

5.2.47 OptionNoChangeDir as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Don't change the current working directory.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionNoChangeDir = true
```

Notes: (Read and Write property)

5.2.48 OptionNoDereferenceLinks as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Shortcuts should not be treated as their target items.
Notes: This allows an application to open a .lnk file rather than what that file is a shortcut to.
(Read and Write property)

5.2.49 OptionNoReadOnlyReturn as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Do not return read-only items.
Notes: This is a default value for the Save dialog.
(Read and Write property)

5.2.50 OptionNoTestFileCreate as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Do not test whether creation of the item as specified in the Save dialog will be successful.
Notes: If this flag is not set, the calling application must handle errors, such as denial of access, discovered when the item is created.
(Read and Write property)

5.2.51 OptionNoValidate as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Do not check for situations that would prevent an application from opening the selected file, such as sharing violations or access denied errors.
Notes: (Read and Write property)

5.2.52 OptionOKButtonNeedsInteraction as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: OKButton needs interaction?
Notes: (Read and Write property)

5.2.53 OptionOverwritePrompt as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: When saving a file, prompt before overwriting an existing file of the same name.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionOverwritePrompt = true
```

Notes: This is a default value for the Save dialog.
(Read and Write property)

5.2.54 OptionPathMustExist as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The item returned must be in an existing folder.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.OptionPathMustExist = true
```

Notes: This is a default value.
(Read and Write property)

5.2.55 OptionPickFolders as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Present an Open dialog that offers a choice of folders rather than files.
Notes: (Read and Write property)

5.2.56 Options as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The current flags that are set to control dialog behavior.
Notes: See kOptions* constants.

Generally, you should read the property, modify it to include or exclude options by setting the appropriate flags and assign it again.
(Read and Write property)

5.2.57 OptionShareaware as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: In the case of a sharing violation when an application is opening a file, call the application back through ShareViolation event for guidance.
Notes: This flag is overridden by kOptionsNoValidate.
(Read and Write property)

5.2.58 OptionStrictFileTypes as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: In the Save dialog, only allow the user to choose a file that has one of the file name extensions specified through SetFileTypes.
Notes: (Read and Write property)

5.2.59 OptionSupportsStreamableItems as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Indicates that the caller is opening a file as a stream (BHID_Stream), so there is no need to download that file.
Notes: (Read and Write property)

5.2.60 ProminentControlID as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Places a control in the dialog so that it stands out compared to other added controls.
Notes: Setting this property causes the control to be placed near the Open or Save button instead of being grouped with the rest of the custom controls.
Only check buttons (check boxes), push buttons, combo boxes, and menus—or a visual group that contains only a single item of one of those types—can be made prominent.
Only one control can be marked in this way. If a dialog has only one added control, that control is marked as prominent by default.
(Read and Write property)

5.2.61 Result as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The choice that the user made in the dialog.
Notes: Result can be called after the dialog has closed or during the handling of an OnFileOk event. Calling this method at any other time will fail. If multiple items were chosen, this method will fail. In the case of multiple items, call Results method.
Show must return a success code for a result to be available to Result.

If not result exists, the plugin returns nil and raises no failed exceptions.
(Read only property)

5.2.62 Title as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The title of the dialog.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
d.title = "Export database"
```

Notes: (Read and Write property)

5.2.63 WindowHandle as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Queries window handle.
Notes: Value is a HWND and may be used in declares.
(Read only property)

5.2.64 CheckButtonState(ControlID as Integer) as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The current state of a check button (check box) in the dialog.
Notes: ControlID: The ID of the check box.

True means checked; false, unchecked.
(Read and Write computed property)

5.2.65 ControlItemState(ControlID as Integer, ItemID as Integer) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The current state of an item in a container control found in the dialog.
Notes: ControlID: The ID of the container control.
ItemID: The ID of the item.

See kControlState* flags.
(Read and Write computed property)

5.2.66 ControlItemText(ControlID as Integer, ItemID as Integer) as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The text of a control item.
Notes: For example, the text that accompanies a radio button or an item in a menu.

ControlID: The ID of the container control.
ItemID: The ID of the item.

The default state of a control item is enabled and visible. Items in control groups cannot be changed after they have been created, with the exception of their enabled and visible states.
Container controls include option button groups, combo boxes, drop-down lists on the Open or Save button, and menus.
(Read and Write computed property)

5.2.67 ControlLabel(ControlID as Integer) as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The text associated with a control, such as button text or an edit box label.
Notes: ControlID: The ID of the control whose text is to be changed.

Control labels can be changed at any time, including when the dialog is visible.
(Read and Write computed property)

5.2.68 ControlState(ControlID as Integer) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the current visibility and enabled states of a given control.
Notes: ControlID: The ID of the control in question.

See kControlState* flags.
(Read and Write computed property)

5.2.69 EditBoxText(ControlID as Integer) as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The current text in an edit box control.

Notes: ControlID: The ID of the edit box.
(Read and Write computed property)

5.2.70 SelectedControlItem(ControlID as Integer) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Item index from specified container controls in the dialog.
Notes: ControlID: The ID of the container control.

Value is the ID of the item that the user selected in the control.

To determine the user's final choice, this method can be called on option button groups, combo boxes, and drop-down lists on the Open or Save button after the dialog has closed. This method cannot be called on menus.
For option button groups and combo boxes, this method can also be called while the dialog is showing, to determine the current choice.

When you query, the plugin does not raise error for failure, but returns 0.
(Read and Write computed property)

5.2.71 Events

5.2.72 ButtonClicked(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when the user clicks a command button.
Notes: ControlID: The ID of the button that the user clicked.

5.2.73 CheckButtonToggled(ControlID as Integer, Checked as Boolean)

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when the user changes the state of a check button (check box).
Notes: ControlID: The ID of the button that the user clicked.
Checked: A boolean indicating the current state of the check button. true if checked; false otherwise.

5.2.74 ControlActivating(ControlID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when an Open button drop-down list customized through EnableOpenDropDown or a Tools menu is about to display its contents.
Notes: ControlID: The ID of the list or menu about to display.

In response to this notification, an application can update the contents of the menu or list about to be displayed, based on the current state of the dialog.

5.2.75 FileOk as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called just before the dialog is about to return with a result.
Notes: Implementations should return true to accept the current result in the dialog or false to refuse it. In the case of false, the dialog should remain open.

When this method is called, the Result and Results methods can be called.
The application can use this callback method to perform additional validation before the dialog closes, or to prevent the dialog from closing. If the application prevents the dialog from closing, it should display a UI to indicate a cause.

An application can also use this method to perform all of its work surrounding the opening or saving of files.

5.2.76 FileTypeChanged

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when the dialog is opened to notify the application of the initial chosen filetype.
Notes: This method is called when the dialog is opened to notify the application of the initially chosen filetype. If the application has code in this event that responds to type changes, it can respond to the type. For example, it could hide certain controls. The application controls the initial file type and could do its own checks, so this method is provided as a convenience.

5.2.77 FolderChanged

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when the user navigates to a new folder.

5.2.78 FolderChanging(Folder as WinShellItemMBS) as boolean

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called before FolderChanged.
Notes: This allows the implementer to stop navigation to a particular location.

Folder: the folder to which the dialog is about to navigate.

Return true to accept or false to decline.

The calling application can set Folder during this callback to redirect navigation to an alternate folder. The actual navigation does not occur until FolderChanging has returned.

If the calling application simply prevents navigation to a particular folder, UI should be displayed with an explanation of the restriction. To obtain a parent HWND for the UI, use WindowHandle property.

Warning: If you implement this, add ”return true” to allow folders to change.

5.2.79 ItemSelected(ControlID as Integer, ItemID as Integer)

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when an item is selected in a combo box, when a user clicks an option button (also known as a radio button), or an item is chosen from the Tools menu.
Notes: ControlID: The ID of the control in which the user made a selection.
ItemID: The ID of the selection.

This notification is not sent when the user chooses an item from the drop-down menu attached to the Open button, because the action taken in that case is always the same: close the dialog as if the user had simply clicked the Open button. For that situation, the application can call SelectedControlItem to obtain the item the user chose from that menu.

5.2.80 Overwrite(item as WinShellItemMBS) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called from the save dialog when the user chooses to overwrite a file.

Notes: item: the item that will be overwritten.

Return one of the kResponse* constants.

5.2.81 SelectionChange

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Called when the user changes the selection in the dialog's view.

5.2.82 ShareViolation(item as WinShellItemMBS) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: .

Function: Enables an application to respond to sharing violations that arise from Open or Save operations.
Notes: item: the item that has the sharing violation.
Return one of the kShareViolation* constants.

The kOptionsShareaware flag must be set through Options before this method is called.
A sharing violation could possibly arise when the application attempts to open a file, because the file could have been locked between the time that the dialog tested it and the application opened it.

5.2.83 Constants

Control States

Constant	Value	Description
kControlStateEnabled	1	The control is active.
kControlStateEnableVisible	3	The control is visible and enabled.
kControlStateInactive	0	The control is inactive and cannot be accessed by the user.
kControlStateVisible	2	The control is visible. The absence of this value indicates that the control is hidden.

Option Flags

Constant	Value	Description
kOptionsAllNonStorageItems	&h80	Enables the user to choose any item in the Shell namespace, not just SFGAO_STREAM or SFAGO_FILESYSTEM attributes. This flag combined with kOptionsForceFileSystem.
kOptionsAllowMultiSelect	&h200	Enables the user to select multiple items in the open dialog. Note this flag is set, the WinFileOpenDialogMBS class must be used to ret items.
kOptionsCreatePrompt	&h2000	Prompt for creation if the item returned in the save dialog does not e that this does not actually create the item.
kOptionsDefaultNoMiniMode	&h20000000	Indicates to the Save As dialog box that it should open in expan Expanded mode is the mode that is set and unset by clicking the the lower-left corner of the Save As dialog box that switches betwe Folders and Hide Folders when clicked. This value is not suppo Windows 7.
kOptionsDontAaddToRecent	&h2000000	Do not add the item being opened or saved to the recent document
kOptionsFileMustExist	&h1000	The item returned must exist. This is a default value for the Open
kOptionsForceFileSystem	&h40	Ensures that returned items are file system items. Note that thi apply to items returned by CurrentSelection.
kOptionsForcePreviewPaneOn	&h40000000	Indicates to the Open dialog box that the preview pane should alw played.
kOptionsForceShowHidden	&h10000000	Include hidden and system items.
kOptionsHideMRUPlaces	&h20000	Hide the list of places from which the user has recently opened or sa This value is not supported as of Windows 7.
kOptionsHidePinnedPlaces	&h40000	Hide items shown by default in the view's navigation pane. This fl used in conjunction with the AddPlace method, to hide standard loc replace them with custom locations. Windows 7 and later. Hide all of the standard namespace location Favorites, Libraries, Computer, and Network) shown in the navigat Windows Vista. Hide the contents of the Favorite Links tree in the pane. Note that the category itself is still displayed, but shown as e
kOptionsNoChangeDir	8	Don't change the current working directory.
kOptionsNoDereferenceLinks	&h100000	Shortcuts should not be treated as their target items. This allows an a to open a .lnk file rather than what that file is a shortcut to.
kOptionsNoReadOnlyReturn	&h8000	Do not return read-only items. This is a default value for the Save
kOptionsNoTestFileCreate	&h10000	Do not test whether creation of the item as specified in the Save be successful. If this flag is not set, the calling application must har such as denial of access, discovered when the item is created.
kOptionsNoValidate	&h100	Do not check for situations that would prevent an application fro the selected file, such as sharing violations or access denied errors.
kOptionsOKButtonNeedsInteraction	&h200000	OKButton needs interaction?
kOptionsOverwritePrompt	2	When saving a file, prompt before overwriting an existing file of the s This is a default value for the Save dialog.
kOptionsPathMustExist	&h800	The item returned must be in an existing folder. This is a default v
kOptionsPickFolders	&h20	Present an Open dialog that offers a choice of folders rather than fi
kOptionsShareaware	&h4000	In the case of a sharing violation when an application is opening the application back through ShareViolation event for guidance. T overridden by kOptionsNoValidate.
kOptionsStrictFileTypes	4	In the Save dialog, only allow the user to choose a file that has one name extensions specified through SetFileTypes.
kOptionsSupportsStreamableItems	&h80000000	Indicates that the caller is opening a file as a stream (BHID_Stream is no need to download that file.

Overwrite Responses

Constant	Value	Description
kOverwriteAccept	1	The application has determined that the file should be returned from the dialog.
kOverwriteDefault	0	The application has not handled the event. The dialog displays a UI asking the user whether the file should be overwritten and returned from the dialog.
kOverwriteRefuse	2	The application has determined that the file should not be returned from the dialog.

Share Violation Responds

Constant	Value	Description
kShareViolationAccept	1	The application has determined that the file should be returned from the dialog.
kShareViolationDefault	0	The application has not handled the event. The dialog displays a UI that indicates that the file is in use and a different file must be chosen.
kShareViolationRefuse	2	The application has determined that the file should not be returned from the dialog.

5.3 class WinFileDialogObserverMBS

5.3.1 class WinFileDialogObserverMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Intercepts save and open dialogs on Windows to provide events to customize.
Notes: You can only have one instance of this class at a time.
First time you create an object, we initialize the necessary feature.

See also NSSavePanelObserverMBS class for Windows.
Blog Entries

- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.4
- MBS Xojo Plugins, version 20.4pr8

Xojo Developer Magazine

- 18.6, page 10: News

5.3.2 Properties

5.3.3 Enabled as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Whether the feature is enabled.
Notes: If value is false, no events will be called.
(Read and Write property)

5.3.4 Events

5.3.5 DidShowDialog(dialog as WinFileDialogMBS, Result as Integer)

Plugin Version: 20.4, Platform: Windows, Targets: .

Function: Event called after dialog showed.
Notes: You can read results from whatever modification you made.

5.3.6 WillShowDialog(dialog as WinFileDialogMBS)

Plugin Version: 20.4, Platform: Windows, Targets: .

Function: Event called before dialog shows.
Notes: You can do customization just before the dialog shows.

5.4 class WinFileOpenDialogMBS

5.4.1 class WinFileOpenDialogMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Extends the WinFileDialogMBS interface by adding methods specific to the open dialog.
Notes: Requires Windows Vista or newer.
All methods may raise WinFileDialogExceptionMBS in case of errors.
Subclass of the WinFileDialogMBS class.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

Videos

- XDC 2020 MBS Plugins Presentation

5.4.2 Methods

5.4.3 Constructor

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The constructor.

5.4.4 Results as WinShellItemArrayMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the user's choices in a dialog that allows multiple selection.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
Dim items As WinShellItemArrayMBS = d.Results

Dim c As Integer = items.Count
For i As Integer = 0 To c-1
Dim item As WinShellItemMBS = items.Item(i)

Listbox1.AddRow item.NativePath
Next
```

Notes: This method can be used whether the selection consists of a single item or multiple items.

Result property can be called after the dialog has closed or during the handling of an OnFileOk event. Calling this method at any other time will fail.
Show must return a success code for a result to be available to Result/Results.

5.4.5 SelectedItems as WinShellItemArrayMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the currently selected items in the dialog. These items may be items selected in the view, or text selected in the file name edit box.
Notes: This method can be used for single item or multiple item selections. If the user has entered new text in the file name field, this can be a time-consuming operation. When the application calls this method, the application parses the text in the filename field. For example, if this is a network share, the operation could take some time. However, this operation will not block the UI, since the user should able to stop the operation, which will result in SelectedItems raising an exception).

5.5 class WinFileSaveDialogMBS

5.5.1 class WinFileSaveDialogMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Extends the WinFileDialogMBS class by adding methods specific to the save dialog, which include those that provide support for the collection of metadata to be persisted with the file.
Notes: All methods may raise WinFileDialogExceptionMBS in case of errors.
Subclass of the WinFileDialogMBS class.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

Videos

- XDC 2020 MBS Plugins Presentation

5.5.2 Methods

5.5.3 Constructor

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The constructor.

5.5.4 Properties

5.5.5 SaveAsItem as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The item to be used as the initial entry in a Save As dialog.
Notes: he name of the item is displayed in the file name edit box, and the containing folder is opened in the view. This would generally be used when the application is saving an item that already exists. For new items, use FileName property.
(Read and Write property)

5.6 class WinFileTypeMBS

5.6.1 class WinFileTypeMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The class for a file type.
Example:

```
Dim d As WinFileOpenDialogMBS // your dialog
Dim FileTypes() As WinFileTypeMBS

FileTypes.Append New WinFileTypeMBS("JPEG image", "*.jpg")
FileTypes.Append New WinFileTypeMBS("PNG image", "*.png")
FileTypes.Append New WinFileTypeMBS("Tiff image", "*.tif;*.tiff")

d.SetFileTypes FileTypes
```

Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

5.6.2 Methods

5.6.3 Constructor(Name as string, Spec as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The constructor.

5.6.4 Properties

5.6.5 Name as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The name of the entry.
Notes: (Read and Write property)

5.6.6 Spec as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The file type specification.
Notes: e.g. "*.jpg;*.jpeg", "*.bmp" or "*.*".
(Read and Write property)

5.7 class WinShellItemArrayMBS

5.7.1 class WinShellItemArrayMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The class for an array of shell items.
Notes: All methods may raise WinFileDialogExceptionMBS in case of errors.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

5.7.2 Methods

5.7.3 Constructor

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

5.7.4 Item(index as Integer) as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the item at the given index in the IShellItemArray.

5.7.5 Properties

5.7.6 Count as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the number of items in the given IShellItem array.
Notes: (Read only property)

5.7.7 Handle as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

5.8 class WinShellItemMBS

5.8.1 class WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The class for a Shell item.
Notes: All methods may raise WinFileDialogExceptionMBS in case of errors.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr3
- Customized File Open and Save Dialogs for Windows

5.8.2 Methods

5.8.3 Compare(other as WinShellItemMBS, Mode as Integer = 0) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Compares two shell items.
Notes: Default mode is to compare display names.
Returns 0 if equal or non-null value if not.

5.8.4 Constructor(item as folderItem)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Creates new shell item based on a folderitem.
See also:

- 5.8.5 Constructor(path as String) 198

5.8.5 Constructor(path as String)

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Creates new shell item based on a path.
See also:

- 5.8.4 Constructor(item as folderItem) 198

5.8.6 Operator_Compare(other as WinShellItemMBS) as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Compares two shell items.
Notes: Returns 0 if equal or non-null value if not.
Compares display name.
This method is called by Xojo when you use = operator on items to compare.

5.8.7 ReadData as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Utility function to read data from item.
Notes: A shell item may not point necessarily to a real file.
This method can read it even if it is not a real file, but still can be opened as IStream.

5.8.8 Thumbnail(preferredSize as Integer) as Picture

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Queries thumbnail for item.
Notes: preferredSize is the size you'd like to have. Resulting image can be smaller or bigger.
Returns nil on any error.
If user disabled thumbnails for explorer, the shell also provides none for us, just icons.
Requires Windows Vista or newer.

5.8.9 Properties

5.8.10 DisplayName as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the display name of the shell item.
Notes: Returns the display name relative to the parent folder. In UI this name is generally ideal for display to the user.

If no path is available, the plugin does not raise exception, but returns "".
(Read only property)

5.8.11 Handle as Integer

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

5.8.12 Item as FolderItem

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Queries folderitem for the item.
Notes: Queries internally native path and builds folderitem for it.

If no path is available, the plugin does not raise exception, but returns nil.
(Read only property)

5.8.13 NativePath as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the native path of the shell item.
Notes: Returns the item's file system path, if it has one.

If no path is available, the plugin does not raise exception, but returns "".
(Read only property)

5.8.14 Parent as WinShellItemMBS

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the parent of an IShellItem object.
Notes: (Read only property)

5.8.15 URLPath as String

Plugin Version: 20.1, Platform: Windows, Targets: Desktop only.

Function: Gets the URL of the shell item.
Notes: Returns the item's URL, if it has one.

Some items do not have a URL, and in those cases a call to DisplayName will fail. This name is suitable for display to the user in some cases, but note that it might not be specified for all items.

If no path is available, the plugin does not raise exception, but returns "".
(Read only property)

5.8.16 Constants

Comparison Modes

Constant	Value	Description
kCompareAllFields	&h80000000	Exact comparison of two instances of a Shell item.
kCompareCanonical	&h10000000	Comparison is based on a canonical name.
kCompareDisplayName	0	Comparison based on the display name in a folder view.
kCompareTestFileSystemPathIfNotEqual	&h20000000	Windows 7 and later. If the Shell items are not the same, test paths.

Chapter 6

Spell Checking

6.1 class WinSpellCheckerExceptionMBS

6.1.1 class WinSpellCheckerExceptionMBS

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The class for an exception with spell checking classes.
Notes: Subclass of the RuntimeException class.

6.2 class WinSpellCheckerMBS

6.2.1 class WinSpellCheckerMBS

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Represents a particular spell checker for a particular language.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

Dim Text As String = "Helo World"
Dim errors() As WinSpellingErrorMBS = w.Check(Text)
Dim Error As WinSpellingErrorMBS = errors(0)

MsgBox "Spelling error in """ + text.Mid(error.StartIndex+1, error.Length)+"""""
```

Notes: Requires Windows 8.
Blog Entries

- News from the MBS Xojo Plugins Version 21.2
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.2
- Spell Checking on Windows for Xojo
- MBS Xojo Plugins, version 21.2pr3

Xojo Developer Magazine

- 19.4, page 10: News

6.2.2 Methods

6.2.3 Add(word as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Treats the provided word as though it were part of the original dictionary.
Notes: The word will no longer be considered misspelled, and will also be considered as a candidate for suggestions.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.4 AutoCorrect(FromWord as String, ToWord as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Causes occurrences of one word to be replaced by another.
Notes: FromWord: The incorrectly spelled word to be autocorrected.
ToWord: The correctly spelled word that should replace from.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.5 Check(text as String) as WinSpellingErrorMBS()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Checks the spelling of the supplied text and returns a collection of spelling errors.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

Dim Text As String = "Helo World"
Dim errors() As WinSpellingErrorMBS = w.Check(Text)
Dim Error As WinSpellingErrorMBS = errors(0)

MsgBox "Spelling error in """ + text.Mid(error.StartIndex+1, error.Length)+"""""
```

Notes: text: The text to check.

Returns an array of error objects.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.6 ComprehensiveCheck(text as String) as WinSpellingErrorMBS()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Checks the spelling of the supplied text in a more thorough manner than Check, and returns a collection of spelling errors.
Notes: Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.7 Constructor(languageTag as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Creates a spell checker that supports the specified language.
Notes: languageTag: A BCP47 language tag that identifies the language for the requested spell checker.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.8 Destructor

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The destructor.

6.2.9 Ignore(word as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Ignores the provided word for the rest of this session.
Notes: Until this WinSpellCheckerMBS object is released, the word will no longer be considered misspelled, but it will not be considered as a candidate for suggestions.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.10 IsSupported(languageTag as String) as Boolean

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Determines if the specified language is supported by a registered spell checker.
Example:

```
If WinSpellCheckerMBS.IsSupported("en-US") Then
MsgBox "US-English is supported."
Else
MsgBox "US-English is not supported!"
End If

If WinSpellCheckerMBS.IsSupported("de-CH") Then
MsgBox "Swiss German is supported."
Else
MsgBox "Swiss German is not supported!"
```

```
End If
```

Notes: languageTag: A BCP47 language tag that identifies the language for the requested spell checker. e.g. "en-US"

Returns true if supported; false if not supported.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.11 OptionDescription(optionId as String) as WinSpellCheckerOptionDescriptionMBS

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Retrieves the information (id, description, heading and labels) of a specific option.
Notes: optionId: Identifier of the option to be retrieved.
Returns WinSpellCheckerOptionDescriptionMBS interface that contains the information about optionId.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.12 OptionIds as String()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets all of the declared option identifiers.
Notes: Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.13 OptionValue(optionId as String) as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Retrieves the value associated with the given option.
Notes: optionId: The option identifier.

Returns the value associated with optionId.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.14 RegisterUserDictionary(dictionaryPath as String, languageTag as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Registers a file to be used as a user dictionary for the current user, until unregistered.
Notes: dictionaryPath: The path of the dictionary file to be registered.
languageTag: The language for which this dictionary should be used. If left empty, it will be used for any language.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.15 Remove(word as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Removes a word that was previously added by Add, or set by Ignore to be ignored.
Notes: Word: The word to be removed from the list of added words, or from the list of ignored words. If the word is not present, nothing will be removed.

Raises exception if word is an empty string, or its length is greater than MAX_WORD_LENGTH (128).

Available on Windows 10 and later.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.16 Suggest(word as String) as String()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Retrieves spelling suggestions for the supplied text.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

Dim suggestions() As String = w.Suggest("Helo")

MsgBox Join(suggestions, EndOfLine)
```

Notes: word: The word or phrase to get suggestions for.

Returns the list of suggestions, returned as string array.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.17 SupportedLanguages as String()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the set of languages/dialects supported by any of the registered spell checkers.
Example:

MsgBox Join(WinSpellCheckerMBS.SupportedLanguages, EndOfLine)

Notes: The supported languages are specific, not neutral.
For Hebrew, for example, the supported language is ”he-IL”, not ”he”.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.18 UnregisterUserDictionary(dictionaryPath as String, languageTag as String)

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Unregisters a previously registered user dictionary. The dictionary will no longer be used by the spell checking functionality.
Notes: dictionaryPath: The path of the dictionary file to be unregistered.
languageTag: The language for which this dictionary was used. It must match the language passed to RegisterUserDictionary.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.2.19 Properties

6.2.20 Handle as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

6.2.21 Id as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the identifier for this spell checker.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

MsgBox w.Id
```

Notes: Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.2.22 LanguageTag as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the BCP47 language tag this instance of the spell checker supports.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

MsgBox w.LanguageTag
```

Notes: Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.2.23 LocalizedName as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets text, suitable to display to the user, that describes this spell checker.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

MsgBox w.LocalizedName
```

Notes: Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.2.24 Events

6.2.25 Changed

Plugin Version: 21.2, Platform: Windows, Targets: .

Function: The changed event.
Notes: The SpellCheckerChanged event fires whenever the state of the spell checker changes in a way such that any text that has been checked should be rechecked. This should happen when the contents of a word list changes, when an option changes, or when the default spell checker changes.

6.3 class WinSpellCheckerOptionDescriptionMBS

6.3.1 class WinSpellCheckerOptionDescriptionMBS

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Represents the description of a spell checker option.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 21.2pr3

6.3.2 Methods

6.3.3 Constructor

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

6.3.4 Destructor

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The destructor.

6.3.5 Labels as String()

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the label enumerator for the spell checker option.
Notes: When there is a single label, the valid values for this option are 0 (not chosen) and 1 (chosen). When there is more than one label, the first label is associated with the value 0, the second with 1, and so on, effectively forming an enumeration. The labels should be in the language of the spell checker or localized to the user's UI language.

Raises WinSpellCheckerExceptionMBS in case of an error.

6.3.6 Properties

6.3.7 Description as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Get the description of the spell checker option.
Notes: The description explains the implications of making the various choices associated with the option. This should be in the language of the spell checker or localized to the user's UI language.

Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.3.8 Handle as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

6.3.9 Heading as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the heading for the spell checker option.
Notes: The heading can be used to group sets of options by placing the header on the first item of that group. This should be in the language of the spell checker or localized to the user's UI language.

Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.3.10 Id as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the identifier of the spell checker option.
Notes: Option identifiers all exist in the same area. Spell checker providers should use the engine identifier and the language tag (if the option is language-specific) to disambiguate potential collisions.

Specifically, the structure for naming the option identifiers should be:

For the Microsoft spell checker engine: <language tag>:<option name>. For example, "pt-BR:2009Reform." For spell check provider engines: <engine id>:<language tag>:<option name>(the language tag may be omitted if the option is not language specific). For example, "samplespell:fr-FR:AccentedUppercase".

Spell check providers are allowed to support existing Microsoft option identifiers, but they must not create new option identifiers in the Microsoft namespace. That is, spell check providers must use the engine identifier as a prefix.

An option identifier is linked to the set of labels and the semantics associated with them. If any change needs to be made between versions to the option (adding a label to the set of labels), a new option with a new identifier must be used. The only valid change that does not require a new identifier is to change from a single label to two labels and vice-versa when the semantics for values 0 and 1 do not change.

Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.4 class WinSpellingErrorMBS

6.4.1 class WinSpellingErrorMBS

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Provides information about a spelling error.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

// tell it to capitalize Xojo!
w.AutoCorrect "xojo", "Xojo"

Dim Text As String = "Hello xojo!"
Dim errors() As WinSpellingErrorMBS = w.check(Text)
Dim Error As WinSpellingErrorMBS = errors(0)

MsgBox "Spelling error in """ + Text.Mid(error.StartIndex+1, error.Length)+""". Must be "+error.Replacement
```

Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 21.2
- Spell Checking on Windows for Xojo
- MBS Xojo Plugins, version 21.2pr3

6.4.2 Methods

6.4.3 Constructor

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

6.4.4 Destructor

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The destructor.

6.4.5 Properties

6.4.6 CorrectiveAction as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Indicates which corrective action should be taken for the spelling error.
Notes: Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.4.7 Length as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the length of the erroneous text.
Notes: Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.4.8 Replacement as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the text to use as replacement text when the corrective action is replace.
Example:

```
Dim w As New WinSpellCheckerMBS("en-US")

// tell it to capitalize Xojo!
w.AutoCorrect "xojo", "Xojo"

Dim Text As String = "Hello xojo!"
Dim errors() As WinSpellingErrorMBS = w.check(Text)
Dim Error As WinSpellingErrorMBS = errors(0)

MsgBox "Spelling error in """ + Text.Mid(error.StartIndex+1, error.Length)+"""". Must be "+error.Replacement
```

Notes: If the CorrectiveAction returned by CorrectiveAction is not kCorrectiveActionReplace, value is the empty string.

Raises WinSpellCheckerExceptionMBS in case of an error.

If empty, you may better go with Suggest() function in WinSpellCheckerMBS class.
(Read only property)

6.4.9 StartIndex as Integer

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: Gets the position in the checked text where the error begins.
Notes: Index is zero based!

Raises WinSpellCheckerExceptionMBS in case of an error.
(Read only property)

6.4.10 Text as String

Plugin Version: 21.2, Platform: Windows, Targets: Desktop only.

Function: The text referenced.
Notes: For your convenience we prepare Text.Middle(StartIndex, Length) for you here.
(Read only property)

6.4.11 Constants

Corrective Actions

Constant	Value	Description
kCorrectiveActionDelete	3	The user should be prompted to delete the indicated erroneous text.
kCorrectiveActionGetSuggestions	1	The user should be prompted with a list of suggestions as returned by Suggest
kCorrectiveActionNone	0	There are no errors.
kCorrectiveActionReplace	2	Replace the indicated erroneous text with the text provided in the suggestion The user does not need to be prompted.

Chapter 7

WebView2

7.1 control DesktopWebView2ControlMBS

7.1.1 control DesktopWebView2ControlMBS

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The MBS control for the Chrome based WebView2 control from Microsoft.
Notes:

Read about WebView2 control here:

https://developer.microsoft.com/en-us/microsoft-edge/webview2/

There you also fine the installers needed to install it, unless you have the 2021 version of Windows, which may include it preinstalled.

If you use this control on macOS and Linux, it will do nothing.
On Windows if the control fails to initialize, the Opened event will not fire.
But if it fires, it will be some time after the open event fired as initialization is asynchronous.

If you call LoadURL, LoadHTML or set URL property too early, we cache that and perform the action later when the web viewer is initialized properly.

If you add an event, we register it with the C++ control. So if you don't specify an event, you may get the default behavior.
Blog Entries

- Performance improvements in Xojo

- New in MBS Xojo Plugins in version 23.1
- WebView2 and Cookies in Xojo
- News from the MBS Xojo Plugins Version 22.2
- MonkeyBread Software Releases the MBS Xojo Plugins in version 22.2
- Upgrading WebKit for Windows support
- News from the MBS Xojo Plugins in version 21.5
- New desktop controls
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.4
- WebView2 for Xojo

Xojo Developer Magazine

- 21.6, page 8: News
- 19.6, page 10: News
- 19.3, page 10: News
- 19.2, page 9: News
- 19.1, page 11: News

7.1.2 Methods

7.1.3 AddScriptToExecuteOnDocumentCreated(JavaScript as String, tag as variant = nil)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Add the provided JavaScript to a list of scripts that should be executed after the global object has been created, but before the HTML document has been parsed and before any other script included by the HTML document is executed.
Notes: This method injects a script that runs on all top-level document and child frame page navigations. This method runs asynchronously, and you must wait for the completion handler to finish before the injected script is ready to run. When this method completes, the handler's Invoke method is called with the id of the injected script. id is a string. To remove the injected script, use RemoveScriptToExecuteOnDocumentCreated.
Note that if an HTML document has sandboxing of some kind via sandbox properties or the Content-Security-Policy HTTP header this will affect the script run here. So, for example, if the 'allow-modals' keyword is not set then calls to the alert function will be ignored.

Calls AddScriptToExecuteOnDocumentCreatedCompleted event later when done.

7.1.4 AddWebResourceRequestedFilter(URL as String, resourceType as Integer)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Adds a URI and resource context filter to the WebResourceRequested event.
Notes: The URI parameter can be a wildcard string ('*': zero or more, '?': exactly one). See kWebResourceContext constants for description of resource context filters.

7.1.5 AvailableCoreWebView2BrowserVersionString as string

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The available version of the WebView2 browser.
Notes: Allows you to query the browser version before creating a control.
Returns empty text if none is available.

7.1.6 CanGoBack as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Returns true if the WebView can navigate to a previous page in the navigation history.
Notes: The HistoryChanged event will fire if CanGoBack changes value.

Returns false if the browser is not yet initialized.

7.1.7 CanGoForward as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Returns true if the WebView can navigate to a next page in the navigation history.
Notes: The HistoryChanged event will fire if CanGoForward changes value.

Returns false if the browser is not yet initialized.

7.1.8 CapturePreview(ImageFormat as Integer = 0)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Capture an image of what WebView is displaying.

Notes: Specify the format of the image with the imageFormat parameter. The resulting image binary data is passed to the CapturePreviewCompleted event.

Calls CapturePreviewCompleted event when done or failed.

7.1.9 ClearSelection

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to clear current selection.
Notes: This is the reverse for SelectAll.

7.1.10 ClearVirtualHostNameToFolderMapping(hostName as String)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop only.

Function: Clears a host name mapping for local folder that was added by SetVirtualHostNameToFolderMapping.
Notes: hostName: The host name to be removed from the mapping.

7.1.11 Copy

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to copy current selection to clipboard.

7.1.12 CreatePrintSettings as WebView2PrintSettingsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Creates the WebView2PrintSettingsMBS object used by the PrintToPdf method.

7.1.13 Cut

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to cut current selection.
Notes: May do a copy, if selection is read only.

7.1.14 ExecuteScript(JavaScript as String, tag as variant = nil)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Execute JavaScript code from the javascript parameter in the current top level document rendered in the WebView.
Example:

```
dim web as DesktopWebView2ControlMBS // your control

web.ExecuteScript "1+5" , "tag value"

// triggers ExecuteScriptCompeleted later with result "6"

web.ExecuteScript "window.chrome.webview.postMessage( { 'Test': 'Hello, world!' } );"

// triggers later WebMessageReceived later
```

Notes: This will execute asynchronously and when complete, if a handler is provided in the ExecuteScriptCompletedHandler parameter, its Invoke method will be called with the result of evaluating the provided JavaScript. The result value is a JSON encoded string. If the result is undefined, contains a reference cycle, or otherwise cannot be encoded into JSON, the JSON null value will be returned as the string 'null'. Note that a function that has no explicit return value returns undefined. If the executed script throws an unhandled exception, then the result is also 'null'. This method is applied asynchronously. If the method is called after NavigationStarting event during a navigation, the script will be executed in the new document when loading it, around the time ContentLoading is fired. ExecuteScript will work even if IsScriptEnabled is set to false.

Calls ExecuteScriptCompleted event later.

7.1.15 ExecuteScriptSync(JavaScript as String, byref ErrorCode as Integer) as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Execute JavaScript code from the javascript parameter in the current top level document rendered in the WebView.
Example:

```
dim web as DesktopWebView2ControlMBS // your control

dim errorCode as integer
dim s as string = web.ExecuteScriptSync("1+2", errorCode)

Break // s contains 3
```

Notes: Same as ExecuteScript, but waits for event and returns result directly.
errorCode is zero on success.
Result is JSON as text, e.g. "null" if there is no result.

7.1.16 GoBack

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Navigates the WebView to the previous page in the navigation history.

7.1.17 GoForward

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Navigates the WebView to the next page in the navigation history.

7.1.18 HTMLText as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Queries HTML text of the current website.
Example:

```
dim web as DesktopWebView2ControlMBS // your control

dim text as string = web.plaintext
dim html as string = web.HTMLText

break // check in debugger
```

Notes: Please don't call directly from NavigationCompleted event since that can freeze. Better use timer.CallLater to call a method later to do this a millisecond later.

7.1.19 LoadHTML(HTML as String)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Initiates a navigation to htmlContent as source HTML of a new document.
Notes: The htmlContent parameter may not be larger than 2 MB in total size. The origin of the new page will be about:blank.

7.1.20 LoadURL(URL as String)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Cause a navigation of the top level document to the specified URI.
Notes: See the navigation events for more information. Note that this starts a navigation and the corresponding NavigationStarting event will fire sometime after this Navigate call completes.

7.1.21 OpenDevToolsWindow

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Opens the DevTools window for the current document in the WebView.
Notes: Does nothing if called when the DevTools window is already open.

7.1.22 Paste

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to paste clipboard content into the current field.
Notes: This may do nothing if there is nothing to paste or nothing to receive (no field in focus).

7.1.23 PlainText as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Queries plain text of the current website.
Example:

```
dim web as DesktopWebView2ControlMBS // your control

dim text as string = web.plaintext
dim html as string = web.HTMLText

break // check in debugger
```

Notes: Please don't call directly from NavigationCompleted event since that can freeze. Better use timer.CallLater to call a method later to do this a millisecond later.

7.1.24 PostWebMessageAsJson(webMessageAsJson as String)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Post the specified webMessage to the top level document in this WebView.
Notes: The top level document's window.chrome.webview's message event fires. JavaScript in that document may subscribe and unsubscribe to the event via the following:

window.chrome.webview.addEventListener('message', handler)
window.chrome.webview.removeEventListener('message', handler)

The event args is an instance of MessageEvent. The IsWebMessageEnabled setting must be true or this method will fail with E_INVALIDARG. The event arg's data property is the webMessage string parameter parsed as a JSON string into a JavaScript object. The event arg's source property is a reference to the window.chrome.webview object. See add_WebMessageReceived for information on sending messages from the HTML document in the WebView to the host. This message is sent asynchronously. If a navigation occurs before the message is posted to the page, then the message will not be sent.

7.1.25 PostWebMessageAsString(webMessageAsString as String)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: This is a helper for posting a message that is a simple string rather than a JSON string representation of a JavaScript object..
Notes: This behaves in exactly the same manner as PostWebMessageAsJson but the window.chrome.webview message event arg's data property will be a string with the same value as webMessageAsString. Use this instead of PostWebMessageAsJson if you want to communicate via simple strings rather than JSON objects.

7.1.26 Print

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to show print dialog.

7.1.27 PrintToPdf(Path as String, PrintSettings as WebView2PrintSettingsMBS = nil)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Print the current page to PDF asynchronously with the provided settings.
Notes: Use Path to specify the path to the PDF file. The host should provide an absolute path, including file name. If the path points to an existing file, the file will be overwritten. If the path is not valid, the method fails with E_INVALIDARG.

The async PrintToPdf operation completes when the data has been written to the PDF file. At this time the PrintCompleted event is invoked. If the application exits before printing is complete, the file is not saved. Only one Printing operation can be in progress at a time. If PrintToPdf is called while a printing operation is in progress, the event is immediately invoked with isSuccessful set to false.

Requires WebView2 in version 1.0.1020.30 or later.

7.1.28 Reload

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Reload the current page.
Notes: This is similar to navigating to the URI of current top level document including all navigation events firing and respecting any entries in the HTTP cache. But, the back/forward history will not be modified.

7.1.29 RemoveScriptToExecuteOnDocumentCreated(ID as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Remove the corresponding JavaScript added using AddScriptToExecuteOnDocumentCreated with the specified script id.

7.1.30 RemoveWebResourceRequestedFilter(URL as String, resourceType as Integer)

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Removes a matching WebResource filter that was previously added for the WebResourceRequested event.
Notes: If the same filter was added multiple times, then it will need to be removed as many times as it was added for the removal to be effective. Raises exception with E_INVALIDARG for a filter that was never

added.

7.1.31 SelectAll

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to select all text.

7.1.32 SetVirtualHostNameToFolderMapping(hostName as String, folderPath as String, accessKind as Integer)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop only.

Function: Sets a mapping between a virtual host name and a folder path to make available to web sites via that host name.
Notes: hostName: A virtual host name.
folderPath: A folder path name to be mapped to the virtual host name. The length must not exceed the Windows MAX_PATH limit.
accessKind: The level of access to resources under the virtual host from other sites.

See kHostResourceAccessKind* constants.

7.1.33 Stop

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Stop all navigations and pending resource fetches.
Notes: Does not stop scripts.

7.1.34 Properties

7.1.35 AdditionalBrowserArguments as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Additional browser arguments can be specified to change the behavior of the WebView.
Notes: These will be passed to the browser process as part of the command line. See Run Chromium with Flags for more information about command line switches to browser process. If the app is launched with a command line switch –edge-webview-switches=xxx the value of that switch (xxx in the above example) will also be appended to the browser process command line. Certain switches like –user-data-dir are internal and

important to WebView. Those switches will be ignored even if specified. If the same switches are specified multiple times, the last one wins. There is no attempt to merge the different values of the same switch, except for disabled and enabled features. The features specified by –enable-features and –disable-features will be merged with simple logic: the features will be the union of the specified features and built-in features, and if a feature is disabled, it will be removed from the enabled features list. App process's command line –edge-webview-switches value are processed after the additionalBrowserArguments parameter is processed. Certain features are disabled internally and can't be enabled. If parsing failed for the specified switches, they will be ignored. Default is to run browser process with no extra flags.
(Read and Write property)

7.1.36 AllowSingleSignOnUsingOSPrimaryAccount as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The AllowSingleSignOnUsingOSPrimaryAccount property is used to enable single sign on with Azure Active Directory (AAD) resources inside WebView using the logged in Windows account and single sign on with web sites using Microsoft account associated with the login in Windows account.
Notes: Default is disabled. Universal Windows Platform apps must also declare enterpriseCloudSSO restricted capability for the single sign on to work.
(Read and Write property)

7.1.37 areBrowserAcceleratorKeysEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Whether all accelerator keys are enabled.
Notes: When this setting is set to false, it disables all accelerator keys that access features specific to a web browser, including but not limited to:

- Ctrl-F and F3 for Find on Page
- Ctrl-P for Print
- Ctrl-R and F5 for Reload
- Ctrl-Plus and Ctrl-Minus for zooming
- Ctrl-Shift-C and F12 for DevTools
- Special keys for browser functions, such as Back, Forward, and Search

It does not disable accelerator keys related to movement and text editing, such as:

- Home, End, Page Up, and Page Down

- Ctrl-X, Ctrl-C, Ctrl-V
- Ctrl-A for Select All
- Ctrl-Z for Undo

Those accelerator keys will always be enabled unless they are handled in the AcceleratorKeyPressed event. This setting has no effect on the AcceleratorKeyPressed event. The event will be fired for all accelerator keys, whether they are enabled or not.

The default value for AreBrowserAcceleratorKeysEnabled is true.

Needs WebView2 in version 1.0.864.35 or newer.
(Read and Write property)

7.1.38 AreDefaultContextMenusEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The AreDefaultContextMenusEnabled property is used to prevent default context menus from being shown to user in WebView.
Notes: It is true by default.
(Read and Write property)

7.1.39 AreDefaultScriptDialogsEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: AreDefaultScriptDialogsEnabled is used when loading a new HTML document.
Notes: If set to false, then WebView won't render the default JavaScript dialog box (Specifically those shown by the JavaScript alert, confirm, prompt functions and beforeunload event). Instead, if an event handler is set via add_ScriptDialogOpening, WebView will send an event that will contain all of the information for the dialog and allow the host app to show its own custom UI. It is true by default.
(Read and Write property)

7.1.40 AreDevToolsEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: AreDevToolsEnabled controls whether the user is able to use the context menu or keyboard shortcuts to open the DevTools window.
Notes: It is true by default.

(Read and Write property)

7.1.41 AreHostObjectsAllowed as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The AreHostObjectsAllowed property is used to control whether host objects are accessible from the page in WebView.
Notes: It is true by default.
(Read and Write property)

7.1.42 BrowserExecutableFolder as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The path to the browser executable to use.
Notes: Must be assigned very early, e.g. in Configure event, before initialization of the control runs.

Use browserExecutableFolder to specify whether WebView2 controls use a fixed or installed version of the WebView2 Runtime that exists on a user machine. To use a fixed version of the WebView2 Runtime, pass the relative folder path that contains the fixed version of the WebView2 Runtime to browserExecutableFolder. To create WebView2 controls that use the installed version of the WebView2 Runtime that exists on user machines, pass a empty string to browserExecutableFolder. In this scenario, the API tries to find a compatible version of the WebView2 Runtime that is installed on the user machine (first at the machine level, and then per user) using the selected channel preference. The path of fixed version of the WebView2 Runtime should not contain \Edge\Application\. When such a path is used, the API fails with HRESULT_FROM_WIN32(ERROR_NOT_SUPPORTED).
(Read and Write property)

7.1.43 BrowserVersionString as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The browser version info of the current environment, including channel name if it is not the stable channel.
Notes: This matches the format of the AvailableCoreWebView2BrowserVersionString API. Channel names are 'beta', 'dev', and 'canary'.
(Read only property)

7.1.44 ContainsFullScreenElement as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Indicates if the WebView contains a fullscreen HTML element.
Notes: (Read only property)

7.1.45 CookieManager as WebView2CookieManagerMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the cookie manager object associated with this webview.
Notes: Requires WebView2 version 1.0.705.50 from January 2021.
(Read only property)
See also:

- 7.1.46 CookieManager as WebView2CookieManagerMBS 232

7.1.46 CookieManager as WebView2CookieManagerMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the cookie manager object associated with this web view.
Notes: (Read only property)
See also:

- 7.1.45 CookieManager as WebView2CookieManagerMBS 232

7.1.47 DefaultBackgroundColor as Color

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The DefaultBackgroundColor property is the color WebView renders underneath all web content.
Example:

```
// set transparent in Opened event:

web.DefaultBackgroundColor = &cFFFFFFFF
```

Notes: This means WebView renders this color when there is no web content loaded such as before the initial navigation or between navigations. This also means web pages with undefined css background properties or background properties containing transparent pixels will render their contents over this color. Web pages with defined and opaque background properties that span the page will obscure the DefaultBackgroundColor and display normally. The default value for this property is white to resemble the native browser experience.

The Color is specified by the color that represents an RGBA value. The A represents an Alpha value, meaning DefaultBackgroundColor can be transparent. In the case of a transparent DefaultBackgroundColor WebView will render hosting app content as the background. This Alpha value is not supported on Windows 7. Any A value other than 255 will result in an exception on Windows 7. It is supported on all other WebView compatible platforms.

Semi-transparent colors are not currently supported by this API and setting DefaultBackgroundColor to a semi-transparent color will fail with an exception. The only supported alpha values are 0 and 255, all other values will result in exception. DefaultBackgroundColor can only be an opaque color or transparent.

Requires version 1.0.774.44 of Webview2 or newer.
Can't be set in Open event as the control is not yet ready.
(Read and Write property)

7.1.48 DocumentTitle as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The title for the current top level document.
Notes: If the document has no explicit title or is otherwise empty, a default that may or may not match the URI of the document will be used.
(Read only property)

7.1.49 IsBuiltInErrorPageEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The IsBuiltInErrorPageEnabled property is used to disable built in error page for navigation failure and render process failure.
Notes: It is true by default. When disabled, blank page will be shown when related error happens.
(Read and Write property)

7.1.50 IsGeneralAutofillEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Whether autofill for information like names, street and email addresses, phone numbers, and arbitrary input is enabled.
Notes: This excludes password and credit card information. When IsGeneralAutofillEnabled is false, no suggestions appear, and no new information is saved. When IsGeneralAutofillEnabled is true, information is saved, suggestions appear and clicking on one will populate the form fields. The default value is true.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.1.51 IsPasswordAutosaveEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Whether autosave for password information is enabled.
Notes: The IsPasswordAutosaveEnabled property behaves independently of the IsGeneralAutofillEnabled property. When IsPasswordAutosaveEnabled is false, no new password data is saved and no Save/Update Password prompts are displayed. However, if there was password data already saved before disabling this setting, then that password information is auto-populated, suggestions are shown and clicking on one will populate the fields. When IsPasswordAutosaveEnabled is true, password information is auto-populated, suggestions are shown and clicking on one will populate the fields, new data is saved, and a Save/Update Password prompt is displayed. The default value is false.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.1.52 IsPinchZoomEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Enable or disable pitch zoom.
Notes: Pinch-zoom, referred to as "Page Scale" zoom, is performed as a post-rendering step, it changes the page scale factor property and scales the surface the web page is rendered onto when user performs a pinch zooming action.

It does not change the layout but rather changes the viewport and clips the web content, the content outside of the viewport isn't visible onscreen and users can't reach this content using mouse.
The IsPinchZoomEnabled property enables or disables the ability of the end user to use a pinching motion on touch input enabled devices to scale the web content in the WebView2. It defaults to TRUE. When set to FALSE, the end user cannot pinch zoom after the next navigation. Disabling/Enabling IsPinchZoomEnabled only affects the end user's ability to use pinch motions and does not change the page scale factor. This API only affects the Page Scale zoom and has no effect on the existing browser zoom properties (IsZoomControlEnabled and ZoomFactor) or other end user mechanisms for zooming.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.1.53 IsScriptEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Controls if JavaScript execution is enabled in all future navigations in the WebView.
Notes: This only affects scripts in the document; scripts injected with ExecuteScript will run even if script is disabled. It is true by default.
(Read and Write property)

7.1.54 IsStatusBarEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: IsStatusBarEnabled controls whether the status bar will be displayed.
Notes: The status bar is usually displayed in the lower left of the WebView and shows things such as the URI of a link when the user hovers over it and other information. It is true by default.
(Read and Write property)

7.1.55 IsWebMessageEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The IsWebMessageEnabled property is used when loading a new HTML document.
Notes: If set to true, communication from the host to the WebView's top level HTML document is allowed via PostWebMessageAsJson, PostWebMessageAsString, and window.chrome.webview's message event (see PostWebMessageAsJson documentation for details). Communication from the WebView's top level HTML document to the host is allowed via window.chrome.webview's postMessage function and add_WebMessageReceived method (see add_WebMessageReceived documentation for details). If set to false, then communication is disallowed. PostWebMessageAsJson and PostWebMessageAsString will fail with E_ACCESSDENIED and window.chrome.webview.postMessage will fail by throwing an instance of an Error object. It is true by default.
(Read and Write property)

7.1.56 IsZoomControlEnabled as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The IsZoomControlEnabled property is used to prevent the user from impacting the zoom of the WebView.
Notes: It is true by default. When disabled, user will not be able to zoom using ctrl+/- or ctrl+mouse wheel, but the zoom can be set via ZoomFactor API.
(Read and Write property)

7.1.57 Language as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The default language that WebView will run with.
Notes: It applies to browser UIs like context menu and dialogs. It also applies to the accept-languages HTTP header that WebView sends to web sites. It is in the format of language [-country] where language is the 2 letter code from ISO 639 and country is the 2 letter code from ISO 3166.
(Read and Write property)

7.1.58 ProcessID as Integer

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The process id of the browser process that hosts the WebView.
Notes: (Read only property)

7.1.59 TargetCompatibleBrowserVersion as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The version of the Edge WebView2 Runtime binaries required to be compatible with the calling application.
Notes: This defaults to the Edge WebView2 Runtime version that corresponds with the version of the SDK the application is using. The format of this value is the same as the format of the BrowserVersionString property and other BrowserVersion values. Only the version part of the BrowserVersion value is respected. The channel suffix, if it exists, is ignored. The version of the Edge WebView2 Runtime binaries actually used may be different from the specified TargetCompatibleBrowserVersion. They are only guaranteed to be compatible. You can check the actual version on the BrowserVersionString property on the control.
(Read and Write property)

7.1.60 URL as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The URI of the current top level document.
Notes: This value potentially changes as a part of the SourceChanged event firing for some cases such as navigating to a different site or fragment navigations. It will remain the same for other types of navigations such as page reloads or history.pushState with the same URL as the current page.

If assigned, calls LoadURL method.
(Read and Write property)

7.1.61 UserAgent as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The User Agent.
Notes: The default value is the default User Agent of the Microsoft Edge browser.

This property may be overridden if the User-Agent header is set in a request. If the parameter is empty the User Agent will not be updated and the current User Agent will remain.

Needs WebView2 in version 1.0.864.35 or newer.
(Read and Write property)

7.1.62 UserDataFolder as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The user data folder location.
Example:

```
Dim w As DesktopWebView2ControlMBS // your control

Dim SupportFolder As FolderItem = SpecialFolder.ApplicationData.Child("MyApp")
SupportFolder.CreateAsFolder

w.UserDataFolder = SupportFolder.NativePath
```

Notes: Must be assigned very early, e.g. in Configure event, before initialization of the control runs.

You may specify the userDataFolder to change the default user data folder location for WebView2. The path is either an absolute file path or a relative file path that is interpreted as relative to the compiled code for the current process. For UWP apps, the default user data folder is the app data folder for the package. For non-UWP apps, the default user data ({ Executable File Name } .WebView2) folder is created in the same directory next to the compiled code for the app. WebView2 creation fails if the compiled code is running in a directory in which the process does not have permission to create a new directory. The app is responsible to clean up the associated user data folder when it is done.
(Read and Write property)

7.1.63 ZoomFactor as Double

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The ZoomFactor property.

Notes: (Read and Write property)

7.1.64 Events

7.1.65 AddScriptToExecuteOnDocumentCreatedCompleted(JavaScript as String, ErrorCode as Integer, ID as String, Tag as Variant)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report that AddScriptToExecuteOnDocumentCreated is done and provide the ID.

7.1.66 CapturePreviewCompleted(ImageFormat as Integer, ErrorCode as Integer, PictureData as String)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called when CapturePreview call is done.
Notes: We pass you the image data as a string, so you can e.g. write it to a PNG or JPEG file.
Otherwise ErrorCode tells you the reason for the error.

7.1.67 Configure

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called while initializing, where you can apply properties just before plugin reads them.
Notes: Can be used to set UserDataFolder property.

7.1.68 ContainsFullScreenElementChanged

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: ContainsFullScreenElementChanged fires when the ContainsFullScreenElement property changes.
Notes: This means that an HTML element inside the WebView is entering fullscreen to the size of the WebView or leaving fullscreen. This event is useful when, for example, a video element requests to go fullscreen. The listener of ContainsFullScreenElementChanged can then resize the WebView in response.

7.1.69 ContentLoading(isErrorPage as Boolean, NavigationID as UInt64)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The content loading event.d
Notes: ContentLoading fires before any content is loaded, including scripts added with AddScriptToExecuteOnDocumentCreated. ContentLoading will not fire if a same page navigation occurs (such as through fragment navigations or history.pushState navigations). This follows the NavigationStarting and SourceChanged events and precedes the HistoryChanged and NavigationCompleted events.

7.1.70 DocumentTitleChanged

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report a document title change.
Notes: DocumentTitleChanged fires when the DocumentTitle property of the WebView changes and may fire before or after the NavigationCompleted event.

7.1.71 ExecuteScriptCompleted(JavaScript as String, ErrorCode as Integer, resultObjectAsJson as String, Tag as Variant)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report ExecuteScript method is done.

7.1.72 FocusLost

Plugin Version: 21.5, Platform: Windows, Targets: .

Function:

LostFocus fires when WebView lost focus.
In older Xojo versions, this event is named LostFocus.
Notes:

In the case where MoveFocusRequested event is fired, the focus is still on WebView when MoveFocusRequested event fires. LostFocus only fires afterwards when app's code or default action of MoveFocusRequested event set focus away from WebView.

7.1.73 FocusReceived

Plugin Version: 21.5, Platform: Windows, Targets: .

Function:

GotFocus fires when WebView got focus.

In older Xojo versions, this event is named GotFocus.

7.1.74 FrameNavigationCompleted(isSuccess as Boolean, ErrorStatus as Integer, NavigationID as UInt64)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: FrameNavigationCompleted fires when a child frame has completely loaded (body.onload has fired) or loading stopped with error.

7.1.75 FrameNavigationStarting(URL as String, IsUserInitiated as Boolean, IsRedirected as Boolean, NavigationID as UInt64) as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: FrameNavigationStarting fires when a child frame in the WebView requests permission to navigate to a different URI. This will fire for redirects as well.
Notes: Corresponding navigations can be blocked until the event handler returns.
Return true to block the request.

7.1.76 HistoryChanged

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report history change.
Notes: HistoryChanged listens to the change of navigation history for the top level document. Use HistoryChanged to check if CanGoBack/CanGoForward value has changed. HistoryChanged also fires for using GoBack/GoForward. HistoryChanged fires after SourceChanged and ContentLoading.

7.1.77 MenuBarSelected

Plugin Version: 22.1, Platform: Windows, Targets: .

Function:

The event where you can enable menu items.
In older Xojo versions, this event is named EnableMenuItems.

7.1.78 NavigationCompleted(isSuccess as Boolean, ErrorStatus as Integer, NavigationID as UInt64)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report a navigation action completed.
Notes: NavigationCompleted fires when the WebView has completely loaded (body.onload has fired) or loading stopped with error.

Please don't process directly here, but maybe call a method with timer.CallLater to do processing like using HTMLText or PlainText functions.

Like the DocumentCompleted event in Xojo.

7.1.79 NavigationStarting(URL as String, IsUserInitiated as Boolean, IsRedirected as Boolean, NavigationID as UInt64) as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report a navigation action.
Notes: NavigationStarting fires when the WebView main frame is requesting permission to navigate to a different URI. This will fire for redirects as well.
Corresponding navigations can be blocked until the event handler returns.

Return true to cancel it like Xojo's CancelLoad event.

This event is great to check the URL. If you like to block it, you may just return true. If the user initiated the request, you may instead want to load a warning page. Also check the URL and decide whether to turn scripting on or off.

7.1.80 NewWindowRequested(URL as String, IsUserInitiated as Boolean, WindowFeatures as WebView2WindowFeaturesMBS, byref NewWindow as Variant) as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called when a new window needs to be opened.
Notes: Return true to indicate you handled the event.
If you create a new window with a DesktopWebView2ControlMBS (or DesktopDesktopWebView2ControlMBS), you can put it in NewWindow property.

IsUserInitiated:
True when the new window request was initiated through a user gesture.

Examples of user initiated requests are:
Selecting an anchor tag with target
Programmatic window open from a script that directly run as a result of user interaction such as via onclick handlers.
Non-user initiated requests are programmatic window opens from a script that are not directly triggered by user interaction, such as those that run while loading a new page or via timers. The Microsoft Edge popup blocker is disabled for WebView so the app is able to use this flag to block non-user initiated popups.

URL: The target uri of the new window requested.

NewWindow: Set the new control to use.

If the NewWindow is set, the top-level window returns as the opened WindowProxy. The NewWindow property should be set to a control that has not been navigated previously. Don't use methods that cause navigation or interact with the DOM on this web view. Setting event handlers, changing Settings properties, or other methods are fine to call. Changes to settings should be made before NewWindow is called to ensure that those settings take effect for the newly setup WebView. Once the NewWindow is set the underlying web contents of this CoreWebView2 will be replaced and navigated as appropriate for the new window. After setting new window it cannot be changed and error will be return otherwise.

7.1.81 Opened

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called when browser initialization is done.
Notes: Typical event flow is like this:

- Configure
- Open
- Window.Open
- Opened

Opened is called a few milliseconds later.

If you load an URL, the events happen like this:

- NavigationStarting
- SourceChanged
- ContentLoading
- HistoryChanged
- DocumentTitleChanged
- NavigationCompleted

7.1.82 PermissionRequested(URL as String, PermissionKind as Integer, IsUserInitiated as Boolean, byref State as Integer)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to query permissions from user.
Notes: PermissionRequested fires when content in a WebView requests permission to access some privileged resources.
If a deferral is not taken on the event args, the subsequent scripts can be blocked until the event handler returns. If a deferral is taken, then the scripts are blocked until the deferral is completed.

URL: The origin of the web content that requests the permission.
PermissionKind: The type of the permission that is requested.
IsUserInitiated: True when the permission request was initiated through a user gesture.
State: The status of a permission request, i.e.

Please assign State the answer you like to provide.

7.1.83 PrintCompleted(Path as String, errorCode as Integer, isSuccessful as boolean)

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: Receives the result of the PrintToPdf method.
Notes: If the print to PDF operation succeeds, isSuccessful is true. Otherwise, if the operation failed, isSuccessful is set to false. An invalid path returns E_INVALIDARG in errorCode.

7.1.84 ProcessFailed(processFailedKind as Integer)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: ProcessFailed fires when a WebView process is terminated unexpectedly or becomes unresponsive.

7.1.85 SourceChanged(isNewDocument as Boolean)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event to report a change in the URL.
Notes: SourceChanged fires when the Source property changes. SourceChanged fires for navigating to a different site or fragment navigations. It will not fire for other types of navigations such as page reloads or history.pushState with the same URL as the current page. SourceChanged fires before ContentLoading for navigation to a new document.

7.1.86 WebMessageReceived(Source as String, webMessageAsJson as String, webMessageAsString as String)

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called for a web message.
Notes: WebMessageReceived fires when the IsWebMessageEnabled setting is set and the top level document of the WebView calls window.chrome.webview.postMessage. The postMessage function is void postMessage(object) where object is any object supported by JSON conversion.

webMessageAsString is empty if we can't serialize it to text.

7.1.87 WindowCloseRequested

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event where JavaScript asks to close window.
Notes: WindowCloseRequested fires when content inside the WebView requested to close the window, such as after window.close is called. The app should close the WebView and related app window if that makes sense to the app.

7.1.88 ZoomFactorChanged

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: ZoomFactorChanged fires when the ZoomFactor property of the WebView changes.
Notes: The event could fire because the caller modified the ZoomFactor property, or due to the user manually modifying the zoom. When it is modified by the caller via the ZoomFactor property, the internal zoom factor is updated immediately and there will be no ZoomFactorChanged event. WebView associates the last used zoom factor for each site. Therefore, it is possible for the zoom factor to change when navigating to a different page. When the zoom factor changes due to this, the ZoomFactorChanged event fires right after the ContentLoading event.

7.1.89 Constants

Image Formats

Constant	Value	Description
kCapturePreviewImageFormatJPEG	1	JPEG format.
kCapturePreviewImageFormatPNG	0	PNG format.

HostResourceAccessKind

Constant	Value	Description
kHostResourceAccessKindAllow	1	All cross origin resource access is allowed, including accesses that are subj to Cross-Origin Resource Sharing(CORS) check. The behavior is similar t web site sends back http header Access-Control-Allow-Origin: *.
kHostResourceAccessKindDeny	0	All cross origin resource access is denied, including normal sub resource acc as src of a script or image element.
kHostResourceAccessKindDenyCors	2	Cross origin resource access is allowed for normal sub resource access like src of a script or image element, while any access that subjects to CORS ch will be denied.

Permission Kind

Constant	Value	Description
kPermissionKindCamera	2	Permission to capture video.
kPermissionKindClipboardRead	6	Permission to read system clipboard without a user gesture.
kPermissionKindGeoLocation	3	Permission to access geolocation.
kPermissionKindMicrophone	1	Permission to capture audio.
kPermissionKindNotifications	4	Permission to send web notifications.
kPermissionKindOtherSensors	5	Permission to access generic sensor.
kPermissionKindUnknownPermission	0	Unknown permission.

Permission States

Constant	Value	Description
kPermissionStateAllow	1	Grant the permission request.
kPermissionStateDefault	0	Use default browser behavior, which normally prompt users for decision.
kPermissionStateDeny	2	Deny the permission request.

Process Failure Kinds

Constant	Value	Description
kProcessFailedKindBrowserProcessExited	0	Indicates the browser process terminated unexpectedly.
kProcessFailedKindRenderProcessExited	1	Indicates the render process terminated unexpectedly.
kProcessFailedKindRenderProcessUnresponsive	2	Indicates the render process becomes unresponsive.

Error Status Values

Constant	Value	Description
kWebErrorStatusCannotConnect	12	Cannot connect to destination.
kWebErrorStatusCertificateCommonNameIsIncorrect	1	The SSL certificate common name does not match the we
kWebErrorStatusCertificateExpired	2	The SSL certificate has expired.
kWebErrorStatusCertificateIsInvalid	5	The SSL certificate is invalid –this could mean the certi the public key pins for the host name, the certificate is sig authority or using a weak sign algorithm, the certificate violate name constraints, the certificate contains a weak validity period is too long, lack of revocation information anism, non-unique host name, lack of certificate transpar the certificate is chained to a legacy Symantec root.
kWebErrorStatusCertificateRevoked	4	The SSL certificate has been revoked.
kWebErrorStatusClientCertificateContainsErrors	3	The SSL client certificate contains errors.
kWebErrorStatusConnectionAborted	9	The connection was aborted.
kWebErrorStatusConnectionReset	10	The connection was reset.
kWebErrorStatusDisconnected	11	The Internet connection has been lost.
kWebErrorStatusErrorHttpInvalidServerResponse	8	The server returned an invalid or unrecognized response.
kWebErrorStatusHostNameNotResolved	13	Could not resolve provided host name.
kWebErrorStatusOperationCanceled	14	The operation was canceled.
kWebErrorStatusRedirectFailed	15	The request redirect failed.
kWebErrorStatusServerUnreachable	6	The host is unreachable.
kWebErrorStatusTimeout	7	The connection has timed out.
kWebErrorStatusUnexpectedError	16	An unexpected error occurred.
kWebErrorStatusUnknown	0	An unknown error occurred.

Web Resource Context

Constant	Value	Description
kWebResourceContextAll	0	All resources.
kWebResourceContextCspViolationReport	15	CSP Violation Reports.
kWebResourceContextDocument	1	Document resources.
kWebResourceContextEventSource	10	EventSource API communication.
kWebResourceContextFetch	8	Fetch API communication.
kWebResourceContextFont	5	Font resources.
kWebResourceContextImage	3	Image resources.
kWebResourceContextManifest	12	Web App Manifests.
kWebResourceContextMedia	4	Other media resources such as videos.
kWebResourceContextOther	16	Other resources.
kWebResourceContextPing	14	Ping requests.
kWebResourceContextScript	6	Script resources.
kWebResourceContextSignedExchange	13	Signed HTTP Exchanges.
kWebResourceContextStylesheet	2	CSS resources.
kWebResourceContextTextTrack	9	TextTrack resources.
kWebResourceContextWebSocket	11	WebSocket API communication.
kWebResourceContextXMLHttpRequest	7	XML HTTP requests.

7.2 control WebView2ControlMBS

7.2.1 control WebView2ControlMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The MBS control for the Chrome based WebView2 control from Microsoft.
Notes:

Read about WebView2 control here:

https://developer.microsoft.com/en-us/microsoft-edge/webview2/

There you also fine the installers needed to install it, unless you have the 2021 version of Windows, which may include it preinstalled.

If you use this control on macOS and Linux, it will do nothing.
On Windows if the control fails to initialize, the Opened event will not fire.
But if it fires, it will be some time after the open event fired as initialization is asynchronous.

If you call LoadURL, LoadHTML or set URL property too early, we cache that and perform the action later when the web viewer is initialized properly.

If you add an event, we register it with the C++ control. So if you don't specify an event, you may get the default behavior.

All functions may raise WebView2ExceptionMBS in case of errors.
Blog Entries

- WebView2 for Xojo upgrades
- New in MBS Xojo Plugins in version 23.1
- News from the MBS Xojo Plugins Version 22.2
- MonkeyBread Software Releases the MBS Xojo Plugins in version 22.2
- Upgrading WebKit for Windows support
- News from the MBS Xojo Plugins in version 21.5
- News from the MBS Xojo Plugins Version 21.4
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.4
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.1

- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.0

Xojo Developer Magazine

- 21.6, page 8: News
- 19.6, page 10: News
- 19.3, page 10: News
- 19.2, page 9: News
- 19.1, page 11: News

7.2.2 Methods

7.2.3 AddScriptToExecuteOnDocumentCreated(JavaScript as String, tag as variant = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Add the provided JavaScript to a list of scripts that should be executed after the global object has been created, but before the HTML document has been parsed and before any other script included by the HTML document is executed.
Notes: This method injects a script that runs on all top-level document and child frame page navigations. This method runs asynchronously, and you must wait for the completion handler to finish before the injected script is ready to run. When this method completes, the handler's Invoke method is called with the id of the injected script. id is a string. To remove the injected script, use RemoveScriptToExecuteOnDocumentCreated.
Note that if an HTML document has sandboxing of some kind via sandbox properties or the Content-Security-Policy HTTP header this will affect the script run here. So, for example, if the 'allow-modals' keyword is not set then calls to the alert function will be ignored.

Calls AddScriptToExecuteOnDocumentCreatedCompleted event later when done.

7.2.4 AddWebResourceRequestedFilter(URL as String, resourceType as Integer)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Adds a URI and resource context filter to the WebResourceRequested event.
Notes: The URI parameter can be a wildcard string ('*': zero or more, '?': exactly one). See kWebResourceContext constants for description of resource context filters.

7.2.5 AvailableCoreWebView2BrowserVersionString as string

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The available version of the WebView2 browser.
Notes: Allows you to query the browser version before creating a control.
Returns empty text if none is available.

7.2.6 CanGoBack as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Returns true if the WebView can navigate to a previous page in the navigation history.
Notes: The HistoryChanged event will fire if CanGoBack changes value.

Returns false if the browser is not yet initialized.

7.2.7 CanGoForward as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Returns true if the WebView can navigate to a next page in the navigation history.
Notes: The HistoryChanged event will fire if CanGoForward changes value.

Returns false if the browser is not yet initialized.

7.2.8 CapturePreview(ImageFormat as Integer = 0)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Capture an image of what WebView is displaying.
Notes: Specify the format of the image with the imageFormat parameter. The resulting image binary data is passed to the CapturePreviewCompleted event.

Calls CapturePreviewCompleted event when done or failed.

7.2.9 ClearSelection

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to clear current selection.
Notes: This is the reverse for SelectAll.

7.2.10 ClearVirtualHostNameToFolderMapping(hostName as String)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop only.

Function: Clears a host name mapping for local folder that was added by SetVirtualHostNameToFolderMapping.
Notes: hostName: The host name to be removed from the mapping.

7.2.11 Copy

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to copy current selection to clipboard.

7.2.12 CreatePrintSettings as WebView2PrintSettingsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Creates the WebView2PrintSettingsMBS object used by the PrintToPdf method.

7.2.13 Cut

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to cut current selection.
Notes: May do a copy, if selection is read only.

7.2.14 ExecuteScript(JavaScript as String, tag as variant = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Execute JavaScript code from the javascript parameter in the current top level document rendered in the WebView.
Example:

```
dim web as WebView2ControlMBS // your control
```

```
web.ExecuteScript "1+5" , "tag value"

// triggers ExecuteScriptCompeleted later with result "6"

web.ExecuteScript "window.chrome.webview.postMessage( { 'Test': 'Hello, world!' } );"

// triggers later WebMessageReceived later
```

Notes: This will execute asynchronously and when complete, if a handler is provided in the ExecuteScript-CompletedHandler parameter, its Invoke method will be called with the result of evaluating the provided JavaScript. The result value is a JSON encoded string. If the result is undefined, contains a reference cycle, or otherwise cannot be encoded into JSON, the JSON null value will be returned as the string 'null'. Note that a function that has no explicit return value returns undefined. If the executed script throws an unhandled exception, then the result is also 'null'. This method is applied asynchronously. If the method is called after NavigationStarting event during a navigation, the script will be executed in the new document when loading it, around the time ContentLoading is fired. ExecuteScript will work even if IsScriptEnabled is set to false.

Calls ExecuteScriptCompleted event later.

7.2.15 ExecuteScriptSync(JavaScript as String, byref ErrorCode as Integer) as String

Plugin Version: 21.0, Platform: Windows, Targets: Desktop only.

Function: Execute JavaScript code from the javascript parameter in the current top level document rendered in the WebView.
Example:

```
dim web as WebView2ControlMBS // your control

dim errorCode as integer
dim s as string = web.ExecuteScriptSync("1+2", errorCode)

Break // s contains 3
```

Notes: Same as ExecuteScript, but waits for event and returns result directly.
errorCode is zero on success.
Result is JSON as text, e.g. "null" if there is no result.

7.2.16 GoBack

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Navigates the WebView to the previous page in the navigation history.

7.2.17 GoForward

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Navigates the WebView to the next page in the navigation history.

7.2.18 HTMLText as String

Plugin Version: 21.1, Platform: Windows, Targets: Desktop only.

Function: Queries HTML text of the current website.
Example:

```
dim web as WebView2ControlMBS // your control

dim text as string = web.plaintext
dim html as string = web.HTMLText

break // check in debugger
```

Notes: Please don't call directly from NavigationCompleted event since that can freeze. Better use timer.CallLater to call a method later to do this a millisecond later.

7.2.19 LoadHTML(HTML as String)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Initiates a navigation to htmlContent as source HTML of a new document.
Notes: The htmlContent parameter may not be larger than 2 MB in total size. The origin of the new page will be about:blank.

7.2.20 LoadURL(URL as String)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Cause a navigation of the top level document to the specified URI.
Notes: See the navigation events for more information. Note that this starts a navigation and the corresponding NavigationStarting event will fire sometime after this Navigate call completes.

7.2.21 OpenDevToolsWindow

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Opens the DevTools window for the current document in the WebView.
Notes: Does nothing if called when the DevTools window is already open.

7.2.22 Paste

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to paste clipboard content into the current field.
Notes: This may do nothing if there is nothing to paste or nothing to receive (no field in focus).

7.2.23 PlainText as String

Plugin Version: 21.1, Platform: Windows, Targets: Desktop only.

Function: Queries plain text of the current website.
Example:

```
dim web as WebView2ControlMBS // your control

dim text as string = web.plaintext
dim html as string = web.HTMLText

break // check in debugger
```

Notes: Please don't call directly from NavigationCompleted event since that can freeze. Better use timer.CallLater to call a method later to do this a millisecond later.

7.2.24 PostWebMessageAsJson(webMessageAsJson as String)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Post the specified webMessage to the top level document in this WebView.

Notes: The top level document's window.chrome.webview's message event fires. JavaScript in that document may subscribe and unsubscribe to the event via the following:

window.chrome.webview.addEventListener('message', handler)
window.chrome.webview.removeEventListener('message', handler)

The event args is an instance of MessageEvent. The IsWebMessageEnabled setting must be true or this method will fail with E_INVALIDARG. The event arg's data property is the webMessage string parameter parsed as a JSON string into a JavaScript object. The event arg's source property is a reference to the window.chrome.webview object. See add_WebMessageReceived for information on sending messages from the HTML document in the WebView to the host. This message is sent asynchronously. If a navigation occurs before the message is posted to the page, then the message will not be sent.

7.2.25 PostWebMessageAsString(webMessageAsString as String)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: This is a helper for posting a message that is a simple string rather than a JSON string representation of a JavaScript object..
Notes: This behaves in exactly the same manner as PostWebMessageAsJson but the window.chrome.webview message event arg's data property will be a string with the same value as webMessageAsString. Use this instead of PostWebMessageAsJson if you want to communicate via simple strings rather than JSON objects.

7.2.26 Print

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to show print dialog.

7.2.27 PrintToPdf(Path as String, PrintSettings as WebView2PrintSettingsMBS = nil)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Print the current page to PDF asynchronously with the provided settings.
Notes: Use Path to specify the path to the PDF file. The host should provide an absolute path, including file name. If the path points to an existing file, the file will be overwritten. If the path is not valid, the method fails with E_INVALIDARG.

The async PrintToPdf operation completes when the data has been written to the PDF file. At this time the

PrintCompleted event is invoked. If the application exits before printing is complete, the file is not saved. Only one Printing operation can be in progress at a time. If PrintToPdf is called while a printing operation is in progress, the event is immediately invoked with isSuccessful set to false.

Requires WebView2 in version 1.0.1020.30 or later.

7.2.28 Reload

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Reload the current page.
Notes: This is similar to navigating to the URI of current top level document including all navigation events firing and respecting any entries in the HTTP cache. But, the back/forward history will not be modified.

7.2.29 RemoveScriptToExecuteOnDocumentCreated(ID as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Remove the corresponding JavaScript added using AddScriptToExecuteOnDocumentCreated with the specified script id.

7.2.30 RemoveWebResourceRequestedFilter(URL as String, resourceType as Integer)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Removes a matching WebResource filter that was previously added for the WebResourceRequested event.
Notes: If the same filter was added multiple times, then it will need to be removed as many times as it was added for the removal to be effective. Raises exception with E_INVALIDARG for a filter that was never added.

7.2.31 SelectAll

Plugin Version: 22.2, Platform: Windows, Targets: Desktop only.

Function: Asks webview to select all text.

7.2.32 SetVirtualHostNameToFolderMapping(hostName as String, folderPath as String, accessKind as Integer)

Plugin Version: 23.4, Platform: Windows, Targets: Desktop only.

Function: Sets a mapping between a virtual host name and a folder path to make available to web sites via that host name.
Notes: hostName: A virtual host name.
folderPath: A folder path name to be mapped to the virtual host name. The length must not exceed the Windows MAX_PATH limit.
accessKind: The level of access to resources under the virtual host from other sites.

See kHostResourceAccessKind* constants.

7.2.33 Stop

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Stop all navigations and pending resource fetches.
Notes: Does not stop scripts.

7.2.34 Properties

7.2.35 AdditionalBrowserArguments as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Additional browser arguments can be specified to change the behavior of the WebView.
Notes: These will be passed to the browser process as part of the command line. See Run Chromium with Flags for more information about command line switches to browser process. If the app is launched with a command line switch –edge-webview-switches=xxx the value of that switch (xxx in the above example) will also be appended to the browser process command line. Certain switches like –user-data-dir are internal and important to WebView. Those switches will be ignored even if specified. If the same switches are specified multiple times, the last one wins. There is no attempt to merge the different values of the same switch, except for disabled and enabled features. The features specified by –enable-features and –disable-features will be merged with simple logic: the features will be the union of the specified features and built-in features, and if a feature is disabled, it will be removed from the enabled features list. App process's command line –edge-webview-switches value are processed after the additionalBrowserArguments parameter is processed. Certain features are disabled internally and can't be enabled. If parsing failed for the specified switches, they will be ignored. Default is to run browser process with no extra flags.
(Read and Write property)

7.2.36 AllowSingleSignOnUsingOSPrimaryAccount as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The AllowSingleSignOnUsingOSPrimaryAccount property is used to enable single sign on with Azure Active Directory (AAD) resources inside WebView using the logged in Windows account and single sign on with web sites using Microsoft account associated with the login in Windows account.
Notes: Default is disabled. Universal Windows Platform apps must also declare enterpriseCloudSSO restricted capability for the single sign on to work.
(Read and Write property)

7.2.37 areBrowserAcceleratorKeysEnabled as Boolean

Plugin Version: 21.4, Platform: Windows, Targets: Desktop only.

Function: Whether all accelerator keys are enabled.
Notes: When this setting is set to false, it disables all accelerator keys that access features specific to a web browser, including but not limited to:

- Ctrl-F and F3 for Find on Page
- Ctrl-P for Print
- Ctrl-R and F5 for Reload
- Ctrl-Plus and Ctrl-Minus for zooming
- Ctrl-Shift-C and F12 for DevTools
- Special keys for browser functions, such as Back, Forward, and Search

It does not disable accelerator keys related to movement and text editing, such as:

- Home, End, Page Up, and Page Down
- Ctrl-X, Ctrl-C, Ctrl-V
- Ctrl-A for Select All
- Ctrl-Z for Undo

Those accelerator keys will always be enabled unless they are handled in the AcceleratorKeyPressed event. This setting has no effect on the AcceleratorKeyPressed event. The event will be fired for all accelerator keys, whether they are enabled or not.

The default value for AreBrowserAcceleratorKeysEnabled is true.

Needs WebView2 in version 1.0.864.35 or newer.
(Read and Write property)

7.2.38 AreDefaultContextMenusEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The AreDefaultContextMenusEnabled property is used to prevent default context menus from being shown to user in WebView.
Notes: It is true by default.
(Read and Write property)

7.2.39 AreDefaultScriptDialogsEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: AreDefaultScriptDialogsEnabled is used when loading a new HTML document.
Notes: If set to false, then WebView won't render the default JavaScript dialog box (Specifically those shown by the JavaScript alert, confirm, prompt functions and beforeunload event). Instead, if an event handler is set via add_ScriptDialogOpening, WebView will send an event that will contain all of the information for the dialog and allow the host app to show its own custom UI. It is true by default.
(Read and Write property)

7.2.40 AreDevToolsEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: AreDevToolsEnabled controls whether the user is able to use the context menu or keyboard shortcuts to open the DevTools window.
Notes: It is true by default.
(Read and Write property)

7.2.41 AreHostObjectsAllowed as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The AreHostObjectsAllowed property is used to control whether host objects are accessible from the page in WebView.
Notes: It is true by default.

(Read and Write property)

7.2.42 BrowserExecutableFolder as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The path to the browser executable to use.
Notes: Must be assigned very early, e.g. in Configure event, before initialization of the control runs.

Use browserExecutableFolder to specify whether WebView2 controls use a fixed or installed version of the WebView2 Runtime that exists on a user machine. To use a fixed version of the WebView2 Runtime, pass the relative folder path that contains the fixed version of the WebView2 Runtime to browserExecutableFolder. To create WebView2 controls that use the installed version of the WebView2 Runtime that exists on user machines, pass a empty string to browserExecutableFolder. In this scenario, the API tries to find a compatible version of the WebView2 Runtime that is installed on the user machine (first at the machine level, and then per user) using the selected channel preference. The path of fixed version of the WebView2 Runtime should not contain \Edge\Application\. When such a path is used, the API fails with HRESULT_FROM_WIN32(ERROR_NOT_SUPPORTED).
(Read and Write property)

7.2.43 BrowserVersionString as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The browser version info of the current environment, including channel name if it is not the stable channel.
Notes: This matches the format of the AvailableCoreWebView2BrowserVersionString API. Channel names are 'beta', 'dev', and 'canary'.
(Read only property)

7.2.44 ContainsFullScreenElement as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Indicates if the WebView contains a fullscreen HTML element.
Notes: (Read only property)

7.2.45 CookieManager as WebView2CookieManagerMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the cookie manager object associated with this webview.
Notes: Requires WebView2 version 1.0.705.50 from January 2021.
(Read only property)

7.2.46 DefaultBackgroundColor as Color

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The DefaultBackgroundColor property is the color WebView renders underneath all web content.
Example:

```
// set transparent in Opened event:

web.DefaultBackgroundColor = &cFFFFFFFF
```

Notes: This means WebView renders this color when there is no web content loaded such as before the initial navigation or between navigations. This also means web pages with undefined css background properties or background properties containing transparent pixels will render their contents over this color. Web pages with defined and opaque background properties that span the page will obscure the DefaultBackgroundColor and display normally. The default value for this property is white to resemble the native browser experience.

The Color is specified by the color that represents an RGBA value. The A represents an Alpha value, meaning DefaultBackgroundColor can be transparent. In the case of a transparent DefaultBackgroundColor WebView will render hosting app content as the background. This Alpha value is not supported on Windows 7. Any A value other than 255 will result in an exception on Windows 7. It is supported on all other WebView compatible platforms.

Semi-transparent colors are not currently supported by this API and setting DefaultBackgroundColor to a semi-transparent color will fail with an exception. The only supported alpha values are 0 and 255, all other values will result in exception. DefaultBackgroundColor can only be an opaque color or transparent.

Requires version 1.0.774.44 of Webview2 or newer.
Can't be set in Open event as the control is not yet ready.
(Read and Write property)

7.2.47 DocumentTitle as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The title for the current top level document.
Notes: If the document has no explicit title or is otherwise empty, a default that may or may not match the URI of the document will be used.

(Read only property)

7.2.48 IsBuiltInErrorPageEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The IsBuiltInErrorPageEnabled property is used to disable built in error page for navigation failure and render process failure.
Notes: It is true by default. When disabled, blank page will be shown when related error happens.
(Read and Write property)

7.2.49 IsGeneralAutofillEnabled as Boolean

Plugin Version: 21.4, Platform: Windows, Targets: Desktop only.

Function: Whether autofill for information like names, street and email addresses, phone numbers, and arbitrary input is enabled.
Notes: This excludes password and credit card information. When IsGeneralAutofillEnabled is false, no suggestions appear, and no new information is saved. When IsGeneralAutofillEnabled is true, information is saved, suggestions appear and clicking on one will populate the form fields. The default value is true.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.2.50 IsPasswordAutosaveEnabled as Boolean

Plugin Version: 21.4, Platform: Windows, Targets: Desktop only.

Function: Whether autosave for password information is enabled.
Notes: The IsPasswordAutosaveEnabled property behaves independently of the IsGeneralAutofillEnabled property. When IsPasswordAutosaveEnabled is false, no new password data is saved and no Save/Update Password prompts are displayed. However, if there was password data already saved before disabling this setting, then that password information is auto-populated, suggestions are shown and clicking on one will populate the fields. When IsPasswordAutosaveEnabled is true, password information is auto-populated, suggestions are shown and clicking on one will populate the fields, new data is saved, and a Save/Update Password prompt is displayed. The default value is false.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.2.51 IsPinchZoomEnabled as Boolean

Plugin Version: 21.4, Platform: Windows, Targets: Desktop only.

Function: Enable or disable pitch zoom.
Notes: Pinch-zoom, referred to as "Page Scale" zoom, is performed as a post-rendering step, it changes the page scale factor property and scales the surface the web page is rendered onto when user performs a pinch zooming action.

It does not change the layout but rather changes the viewport and clips the web content, the content outside of the viewport isn't visible onscreen and users can't reach this content using mouse.
The IsPinchZoomEnabled property enables or disables the ability of the end user to use a pinching motion on touch input enabled devices to scale the web content in the WebView2. It defaults to TRUE. When set to FALSE, the end user cannot pinch zoom after the next navigation. Disabling/Enabling IsPinchZoomEnabled only affects the end user's ability to use pinch motions and does not change the page scale factor. This API only affects the Page Scale zoom and has no effect on the existing browser zoom properties (IsZoomControlEnabled and ZoomFactor) or other end user mechanisms for zooming.

Needs WebView2 in version 1.0.902.49 or newer.
(Read and Write property)

7.2.52 IsScriptEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Controls if JavaScript execution is enabled in all future navigations in the WebView.
Notes: This only affects scripts in the document; scripts injected with ExecuteScript will run even if script is disabled. It is true by default.
(Read and Write property)

7.2.53 IsStatusBarEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: IsStatusBarEnabled controls whether the status bar will be displayed.
Notes: The status bar is usually displayed in the lower left of the WebView and shows things such as the URI of a link when the user hovers over it and other information. It is true by default.
(Read and Write property)

7.2.54 IsWebMessageEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The IsWebMessageEnabled property is used when loading a new HTML document.
Notes: If set to true, communication from the host to the WebView's top level HTML document is allowed via PostWebMessageAsJson, PostWebMessageAsString, and window.chrome.webview's message event (see PostWebMessageAsJson documentation for details). Communication from the WebView's top level HTML document to the host is allowed via window.chrome.webview's postMessage function and add_WebMessageReceived method (see add_WebMessageReceived documentation for details). If set to false, then communication is disallowed. PostWebMessageAsJson and PostWebMessageAsString will fail with E_ACCESSDENIED and window.chrome.webview.postMessage will fail by throwing an instance of an Error object. It is true by default.
(Read and Write property)

7.2.55 IsZoomControlEnabled as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The IsZoomControlEnabled property is used to prevent the user from impacting the zoom of the WebView.
Notes: It is true by default. When disabled, user will not be able to zoom using ctrl+/- or ctrl+mouse wheel, but the zoom can be set via ZoomFactor API.
(Read and Write property)

7.2.56 Language as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The default language that WebView will run with.
Notes: It applies to browser UIs like context menu and dialogs. It also applies to the accept-languages HTTP header that WebView sends to web sites. It is in the format of language [-country] where language is the 2 letter code from ISO 639 and country is the 2 letter code from ISO 3166.
(Read and Write property)

7.2.57 ProcessID as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The process id of the browser process that hosts the WebView.
Notes: (Read only property)

7.2.58 TargetCompatibleBrowserVersion as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The version of the Edge WebView2 Runtime binaries required to be compatible with the calling application.
Notes: This defaults to the Edge WebView2 Runtime version that corresponds with the version of the SDK the application is using. The format of this value is the same as the format of the BrowserVersionString property and other BrowserVersion values. Only the version part of the BrowserVersion value is respected. The channel suffix, if it exists, is ignored. The version of the Edge WebView2 Runtime binaries actually used may be different from the specified TargetCompatibleBrowserVersion. They are only guaranteed to be compatible. You can check the actual version on the BrowserVersionString property on the control.
(Read and Write property)

7.2.59 URL as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The URI of the current top level document.
Notes: This value potentially changes as a part of the SourceChanged event firing for some cases such as navigating to a different site or fragment navigations. It will remain the same for other types of navigations such as page reloads or history.pushState with the same URL as the current page.

If assigned, calls LoadURL method.
(Read and Write property)

7.2.60 UserAgent as String

Plugin Version: 21.4, Platform: Windows, Targets: Desktop only.

Function: The User Agent.
Notes: The default value is the default User Agent of the Microsoft Edge browser.

This property may be overridden if the User-Agent header is set in a request. If the parameter is empty the User Agent will not be updated and the current User Agent will remain.

Needs WebView2 in version 1.0.864.35 or newer.
(Read and Write property)

7.2.61 UserDataFolder as String

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The user data folder location.
Example:

```
Dim w As WebView2ControlMBS // your control

Dim SupportFolder As FolderItem = SpecialFolder.ApplicationData.Child("MyApp")
SupportFolder.CreateAsFolder

w.UserDataFolder = SupportFolder.NativePath
```

Notes: Must be assigned very early, e.g. in Configure event, before initialization of the control runs.

You may specify the userDataFolder to change the default user data folder location for WebView2. The path is either an absolute file path or a relative file path that is interpreted as relative to the compiled code for the current process. For UWP apps, the default user data folder is the app data folder for the package. For non-UWP apps, the default user data ({ Executable File Name } .WebView2) folder is created in the same directory next to the compiled code for the app. WebView2 creation fails if the compiled code is running in a directory in which the process does not have permission to create a new directory. The app is responsible to clean up the associated user data folder when it is done.
(Read and Write property)

7.2.62 ZoomFactor as Double

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The ZoomFactor property.
Notes: (Read and Write property)

7.2.63 Events

7.2.64 AddScriptToExecuteOnDocumentCreatedCompleted(JavaScript as String, ErrorCode as Integer, ID as String, Tag as Variant)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report that AddScriptToExecuteOnDocumentCreated is done and provide the ID.

7.2.65 CapturePreviewCompleted(ImageFormat as Integer, ErrorCode as Integer, PictureData as String)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event called when CapturePreview call is done.
Notes: We pass you the image data as a string, so you can e.g. write it to a PNG or JPEG file.

Otherwise ErrorCode tells you the reason for the error.

7.2.66 Close

Plugin Version: 20.5, Platform: Windows, Targets: .

Function:

The control is about to close.
In Xojo version 2021r3 and newer this event is named Closing.

7.2.67 Configure

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event called while initializing, where you can apply properties just before plugin reads them.
Notes: Can be used to set UserDataFolder property.

7.2.68 ConstructContextualMenu(base as MenuItem, x as Integer, y as Integer) as Boolean

Plugin Version: 22.1, Platform: Windows, Targets: .

Function: This event is called when it is appropriate to display a contextual menu for the control.

7.2.69 ContainsFullScreenElementChanged

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: ContainsFullScreenElementChanged fires when the ContainsFullScreenElement property changes.
Notes: This means that an HTML element inside the WebView is entering fullscreen to the size of the WebView or leaving fullscreen. This event is useful when, for example, a video element requests to go fullscreen. The listener of ContainsFullScreenElementChanged can then resize the WebView in response.

7.2.70 ContentLoading(isErrorPage as Boolean, NavigationID as UInt64)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The content loading event.d
Notes: ContentLoading fires before any content is loaded, including scripts added with AddScriptToExecu-

teOnDocumentCreated. ContentLoading will not fire if a same page navigation occurs (such as through fragment navigations or history.pushState navigations). This follows the NavigationStarting and SourceChanged events and precedes the HistoryChanged and NavigationCompleted events.

7.2.71 ContextualMenuAction(hitItem as MenuItem) as Boolean

Plugin Version: 22.1, Platform: Windows, Targets: .

Function: Called when a menuitem is choosen.
Notes: This allows the control to react on its relevant menu items. Please return true if you handled it or false to give others a chance.

7.2.72 DocumentTitleChanged

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report a document title change.
Notes: DocumentTitleChanged fires when the DocumentTitle property of the WebView changes and may fire before or after the NavigationCompleted event.

7.2.73 EnableMenuItems

Plugin Version: 22.1, Platform: Windows, Targets: .

Function:

The event where you can enable menu items.
In Xojo version 2021r3 and newer this event is named MenuBarSelected.

7.2.74 ExecuteScriptCompleted(JavaScript as String, ErrorCode as Integer, resultObjectAsJson as String, Tag as Variant)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report ExecuteScript method is done.

7.2.75 FrameNavigationCompleted(isSuccess as Boolean, ErrorStatus as Integer, NavigationID as UInt64)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: FrameNavigationCompleted fires when a child frame has completely loaded (body.onload has fired) or loading stopped with error.

7.2.76 FrameNavigationStarting(URL as String, IsUserInitiated as Boolean, IsRedirected as Boolean, NavigationID as UInt64) as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: FrameNavigationStarting fires when a child frame in the WebView requests permission to navigate to a different URI. This will fire for redirects as well.
Notes: Corresponding navigations can be blocked until the event handler returns.
Return true to block the request.

7.2.77 GotFocus

Plugin Version: 20.5, Platform: Windows, Targets: .

Function:

GotFocus fires when WebView got focus.
In Xojo version 2021r3 and newer this event is named FocusReceived.

7.2.78 HistoryChanged

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report history change.
Notes: HistoryChanged listens to the change of navigation history for the top level document. Use HistoryChanged to check if CanGoBack/CanGoForward value has changed. HistoryChanged also fires for using GoBack/GoForward. HistoryChanged fires after SourceChanged and ContentLoading.

7.2.79 LostFocus

Plugin Version: 20.5, Platform: Windows, Targets: .

Function:

LostFocus fires when WebView lost focus.
In Xojo version 2021r3 and newer this event is named FocusLost.
Notes:

In the case where MoveFocusRequested event is fired, the focus is still on WebView when MoveFocusRequested event fires. LostFocus only fires afterwards when app's code or default action of MoveFocusRequested event set focus away from WebView.

7.2.80 NavigationCompleted(isSuccess as Boolean, ErrorStatus as Integer, NavigationID as UInt64)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report a navigation action completed.
Notes: NavigationCompleted fires when the WebView has completely loaded (body.onload has fired) or loading stopped with error.

Please don't process directly here, but maybe call a method with timer.CallLater to do processing like using HTMLText or PlainText functions.

Like the DocumentCompleted event in Xojo.

7.2.81 NavigationStarting(URL as String, IsUserInitiated as Boolean, IsRedirected as Boolean, NavigationID as UInt64) as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report a navigation action.
Notes: NavigationStarting fires when the WebView main frame is requesting permission to navigate to a different URI. This will fire for redirects as well.
Corresponding navigations can be blocked until the event handler returns.

Return true to cancel it like Xojo's CancelLoad event.

This event is great to check the URL. If you like to block it, you may just return true. If the user initiated the request, you may instead want to load a warning page. Also check the URL and decide whether to turn scripting on or off.

7.2.82 NewWindowRequested(URL as String, IsUserInitiated as Boolean, WindowFeatures as WebView2WindowFeaturesMBS, byref NewWindow as Variant) as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: .

Function: The event called when a new window needs to be opened.
Notes: Return true to indicate you handled the event.
If you create a new window with a WebView2ControlMBS (or DesktopWebView2ControlMBS), you can put it in NewWindow property.

IsUserInitiated:
True when the new window request was initiated through a user gesture.

Examples of user initiated requests are:
Selecting an anchor tag with target
Programmatic window open from a script that directly run as a result of user interaction such as via onclick handlers.
Non-user initiated requests are programmatic window opens from a script that are not directly triggered by user interaction, such as those that run while loading a new page or via timers. The Microsoft Edge popup blocker is disabled for WebView so the app is able to use this flag to block non-user initiated popups.

URL: The target uri of the new window requested.

NewWindow: Set the new control to use.

If the NewWindow is set, the top-level window returns as the opened WindowProxy. The NewWindow property should be set to a control that has not been navigated previously. Don't use methods that cause navigation or interact with the DOM on this web view. Setting event handlers, changing Settings properties, or other methods are fine to call. Changes to settings should be made before NewWindow is called to ensure that those settings take effect for the newly setup WebView. Once the NewWindow is set the underlying web contents of this CoreWebView2 will be replaced and navigated as appropriate for the new window. After setting new window it cannot be changed and error will be return otherwise.

7.2.83 Open

Plugin Version: 20.5, Platform: Windows, Targets: .

Function:

The control is about to was created and you can initialize it.
In Xojo version 2021r3 and newer this event is named Opening.

7.2.84 Opened

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event called when browser initialization is done.
Notes: Typical event flow is like this:

- Configure
- Open
- Window.Open
- Opened

Opened is called a few milliseconds later.

If you load an URL, the events happen like this:

- NavigationStarting
- SourceChanged
- ContentLoading
- HistoryChanged
- DocumentTitleChanged
- NavigationCompleted

7.2.85 PermissionRequested(URL as String, PermissionKind as Integer, IsUserInitiated as Boolean, byref State as Integer)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to query permissions from user.
Notes: PermissionRequested fires when content in a WebView requests permission to access some privileged resources.
If a deferral is not taken on the event args, the subsequent scripts can be blocked until the event handler returns. If a deferral is taken, then the scripts are blocked until the deferral is completed.

URL: The origin of the web content that requests the permission.
PermissionKind: The type of the permission that is requested.
IsUserInitiated: True when the permission request was initiated through a user gesture.

State: The status of a permission request, i.e.

Please assign State the answer you like to provide.

7.2.86 PrintCompleted(Path as String, errorCode as Integer, isSuccessful as boolean)

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: Receives the result of the PrintToPdf method.
Notes: If the print to PDF operation succeeds, isSuccessful is true. Otherwise, if the operation failed, isSuccessful is set to false. An invalid path returns E_INVALIDARG in errorCode.

7.2.87 ProcessFailed(processFailedKind as Integer)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: ProcessFailed fires when a WebView process is terminated unexpectedly or becomes unresponsive.

7.2.88 SourceChanged(isNewDocument as Boolean)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event to report a change in the URL.
Notes: SourceChanged fires when the Source property changes. SourceChanged fires for navigating to a different site or fragment navigations. It will not fire for other types of navigations such as page reloads or history.pushState with the same URL as the current page. SourceChanged fires before ContentLoading for navigation to a new document.

7.2.89 WebMessageReceived(Source as String, webMessageAsJson as String, webMessageAsString as String)

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event called for a web message.
Notes: WebMessageReceived fires when the IsWebMessageEnabled setting is set and the top level document of the WebView calls window.chrome.webview.postMessage. The postMessage function is void postMessage(object) where object is any object supported by JSON conversion.

webMessageAsString is empty if we can't serialize it to text.

7.2.90 WindowCloseRequested

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: The event where JavaScript asks to close window.
Notes: WindowCloseRequested fires when content inside the WebView requested to close the window, such as after window.close is called. The app should close the WebView and related app window if that makes sense to the app.

7.2.91 ZoomFactorChanged

Plugin Version: 20.5, Platform: Windows, Targets: .

Function: ZoomFactorChanged fires when the ZoomFactor property of the WebView changes.
Notes: The event could fire because the caller modified the ZoomFactor property, or due to the user manually modifying the zoom. When it is modified by the caller via the ZoomFactor property, the internal zoom factor is updated immediately and there will be no ZoomFactorChanged event. WebView associates the last used zoom factor for each site. Therefore, it is possible for the zoom factor to change when navigating to a different page. When the zoom factor changes due to this, the ZoomFactorChanged event fires right after the ContentLoading event.

7.2.92 Constants

Image Formats

Constant	Value	Description
kCapturePreviewImageFormatJPEG	1	JPEG format.
kCapturePreviewImageFormatPNG	0	PNG format.

HostResourceAccessKind

Constant	Value	Description
kHostResourceAccessKindAllow	1	All cross origin resource access is allowed, including accesses that are subj to Cross-Origin Resource Sharing(CORS) check. The behavior is similar t web site sends back http header Access-Control-Allow-Origin: *.
kHostResourceAccessKindDeny	0	All cross origin resource access is denied, including normal sub resource acc as src of a script or image element.
kHostResourceAccessKindDenyCors	2	Cross origin resource access is allowed for normal sub resource access like src of a script or image element, while any access that subjects to CORS ch will be denied.

Permission Kind

Constant	Value	Description
kPermissionKindCamera	2	Permission to capture video.
kPermissionKindClipboardRead	6	Permission to read system clipboard without a user gesture.
kPermissionKindGeoLocation	3	Permission to access geolocation.
kPermissionKindMicrophone	1	Permission to capture audio.
kPermissionKindNotifications	4	Permission to send web notifications.
kPermissionKindOtherSensors	5	Permission to access generic sensor.
kPermissionKindUnknownPermission	0	Unknown permission.

Permission States

Constant	Value	Description
kPermissionStateAllow	1	Grant the permission request.
kPermissionStateDefault	0	Use default browser behavior, which normally prompt users for decision.
kPermissionStateDeny	2	Deny the permission request.

Process Failure Kinds

Constant	Value	Description
kProcessFailedKindBrowserProcessExited	0	Indicates the browser process terminated unexpectedly.
kProcessFailedKindRenderProcessExited	1	Indicates the render process terminated unexpectedly.
kProcessFailedKindRenderProcessUnresponsive	2	Indicates the render process becomes unresponsive.

Error Status Values

Constant	Value	Description
kWebErrorStatusCannotConnect	12	Cannot connect to destination.
kWebErrorStatusCertificateCommonNameIsIncorrect	1	The SSL certificate common name does not match the we
kWebErrorStatusCertificateExpired	2	The SSL certificate has expired.
kWebErrorStatusCertificateIsInvalid	5	The SSL certificate is invalid –this could mean the certi the public key pins for the host name, the certificate is sig authority or using a weak sign algorithm, the certificate violate name constraints, the certificate contains a weak validity period is too long, lack of revocation information anism, non-unique host name, lack of certificate transpar the certificate is chained to a legacy Symantec root.
kWebErrorStatusCertificateRevoked	4	The SSL certificate has been revoked.
kWebErrorStatusClientCertificateContainsErrors	3	The SSL client certificate contains errors.
kWebErrorStatusConnectionAborted	9	The connection was aborted.
kWebErrorStatusConnectionReset	10	The connection was reset.
kWebErrorStatusDisconnected	11	The Internet connection has been lost.
kWebErrorStatusErrorHttpInvalidServerResponse	8	The server returned an invalid or unrecognized response.
kWebErrorStatusHostNameNotResolved	13	Could not resolve provided host name.
kWebErrorStatusOperationCanceled	14	The operation was canceled.
kWebErrorStatusRedirectFailed	15	The request redirect failed.
kWebErrorStatusServerUnreachable	6	The host is unreachable.
kWebErrorStatusTimeout	7	The connection has timed out.
kWebErrorStatusUnexpectedError	16	An unexpected error occurred.
kWebErrorStatusUnknown	0	An unknown error occurred.

Web Resource Context

Constant	Value	Description
kWebResourceContextAll	0	All resources.
kWebResourceContextCspViolationReport	15	CSP Violation Reports.
kWebResourceContextDocument	1	Document resources.
kWebResourceContextEventSource	10	EventSource API communication.
kWebResourceContextFetch	8	Fetch API communication.
kWebResourceContextFont	5	Font resources.
kWebResourceContextImage	3	Image resources.
kWebResourceContextManifest	12	Web App Manifests.
kWebResourceContextMedia	4	Other media resources such as videos.
kWebResourceContextOther	16	Other resources.
kWebResourceContextPing	14	Ping requests.
kWebResourceContextScript	6	Script resources.
kWebResourceContextSignedExchange	13	Signed HTTP Exchanges.
kWebResourceContextStylesheet	2	CSS resources.
kWebResourceContextTextTrack	9	TextTrack resources.
kWebResourceContextWebSocket	11	WebSocket API communication.
kWebResourceContextXMLHttpRequest	7	XML HTTP requests.

7.3 class WebView2CookieManagerMBS

7.3.1 class WebView2CookieManagerMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Creates, adds or updates, gets, or or view the cookies.
Notes: The changes would apply to the context of the user profile. That is, other WebViews under the same user profile could be affected.

All functions may raise WebView2ExceptionMBS in case of errors.
Requires WebView2 version 1.0.705.50 from January 2021.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.1
- WebView2 and Cookies in Xojo
- MBS Xojo Plugins, version 23.1pr4

7.3.2 Methods

7.3.3 AddOrUpdateCookie(cookie as WebView2CookieMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Adds or updates a cookie with the given cookie data; may overwrite cookies with matching name, domain, and path if they exist.
Notes: This method will fail if the domain of the given cookie is not specified.

7.3.4 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.
See also:

- 7.3.5 Constructor(cookie as WebView2CookieMBS) 276

7.3.5 Constructor(cookie as WebView2CookieMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The copy constructor.
Notes: Enables you to make a subclass and then initialize it with an existing cookie manager.
See also:

- 7.3.4 Constructor 276

7.3.6 CopyCookie(Cookie as WebView2CookieMBS) as WebView2CookieMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Creates a cookie whose params matches those of the specified cookie.

7.3.7 CreateCookie(Name as String, Value as String, Domain as String, Path as String) as WebView2CookieMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Create a cookie object with a specified name, value, domain, and path.
Notes: One can set other optional properties after cookie creation. This only creates a cookie object and it is not added to the cookie manager until you call AddOrUpdateCookie. Leading or trailing whitespace(s), empty string, and special characters are not allowed for name. See WebView2CookieMBS class for more details.

7.3.8 DeleteAllCookies

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Deletes all cookies under the same profile.
Notes: This could affect other WebViews under the same user profile.

7.3.9 DeleteCookie(cookie as WebView2CookieMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Deletes a cookie whose name and domain/path pair match those of the specified cookie.

7.3.10 DeleteCookies(Name as String, URI as string)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Deletes cookies with matching name and uri.
Notes: Cookie name is required. All cookies with the given name where domain and path match provided URI are deleted.

7.3.11 DeleteCookiesWithDomainAndPath(Name as String, Domain as string, Path as String)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Deletes cookies with matching name and domain/path pair.
Notes: Cookie name is required. If domain is specified, deletes only cookies with the exact domain. If path is specified, deletes only cookies with the exact path.

7.3.12 GetCookies(URI as String = "")

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets a list of cookies matching the specific URI.
Notes: If uri is empty string or null, all cookies under the same profile are returned. You can modify the cookie objects by calling AddOrUpdateCookie, and the changes will be applied to the webview.

Calls GotCookies event later.

7.3.13 GetCookiesSync(URI as String = "") as WebView2CookieMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets a list of cookies matching the specific URI.
Example:

```
dim web as WebView2ControlMBS // your control
Dim cookiemanager As WebView2CookieManagerMBS = web.CookieManager

// get all cookies synchronously
Dim cookies() As WebView2CookieMBS = cookiemanager.GetCookiesSync
```

Notes: If uri is empty string or null, all cookies under the same profile are returned. You can modify the cookie objects by calling AddOrUpdateCookie, and the changes will be applied to the webview.

This is the synchronous version, where we wait for cookies.

7.3.14 Properties

7.3.15 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

7.3.16 Events

7.3.17 GotCookies(ErrorCode as Integer, Cookies() as WebView2CookieMBS)

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: Called when GetCookies finished.

7.4 class WebView2CookieMBS

7.4.1 class WebView2CookieMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Provides a set of properties that are used to manage a cookie.
Notes: All functions may raise WebView2ExceptionMBS in case of errors.
Requires WebView2 version 1.0.705.50 from January 2021.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.1
- WebView2 and Cookies in Xojo
- MBS Xojo Plugins, version 23.1pr4

7.4.2 Methods

7.4.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

7.4.4 Properties

7.4.5 Domain as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The domain for which the cookie is valid.
Notes: The default is the host that this cookie has been received from. Note that, for instance, ".bing.com", "bing.com", and "www.bing.com" are considered different domains.
(Read only property)

7.4.6 Expires as Double

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The expiration date and time for the cookie as the number of seconds since the UNIX epoch.
Notes: The default is -1.0, which means cookies are session cookies by default.

Cookies are session cookies and will not be persistent if Expires is set to -1.0. NaN, infinity, and any negative value set other than -1.0 is disallowed.
(Read and Write property)

7.4.7 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

7.4.8 IsHttpOnly as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Whether this cookie is http-only.
Notes: True if a page script or other active content cannot access this cookie. The default is false.
(Read and Write property)

7.4.9 IsSecure as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The security level of this cookie.
Notes: True if the client is only to return the cookie in subsequent requests if those requests use HTTPS. The default is false. Note that cookie that requests kCookieSameSiteKindNone but is not marked Secure will be rejected.
(Read and Write property)

7.4.10 IsSession as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Whether this is a session cookie. The default is false.
Notes: (Read only property)

7.4.11 Name as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Cookie name.
Notes: (Read only property)

7.4.12 Path as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The path for which the cookie is valid.
Notes: The default is "/", which means this cookie will be sent to all pages on the Domain.
(Read only property)

7.4.13 SameSite as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: SameSite status of the cookie which represents the enforcement mode of the cookie.
Notes: The default is kCookieSameSiteKindLax.
(Read and Write property)

7.4.14 Value as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Cookie value.
Notes: (Read and Write property)

7.4.15 Constants

Same Site Rules

Constant	Value	Description
kCookieSameSiteKindLax	1	Lax.
kCookieSameSiteKindNone	0	None.
kCookieSameSiteKindStrict	2	Strict.

7.5 class WebView2ExceptionMBS

7.5.1 class WebView2ExceptionMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The class for the exceptions raised by our WebView2 control.
Notes: Subclass of the RuntimeException class.

7.6 class WebView2PrintSettingsMBS

7.6.1 class WebView2PrintSettingsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Settings used by the PrintToPdf method.
Notes: Other programmatic printing is not currently supported, but Microsoft may add more later.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- WebView2 for Xojo upgrades
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.2
- MBS Xojo Plugins, version 23.2pr5

Xojo Developer Magazine

- 21.4, page 10: News

7.6.2 Methods

7.6.3 Constructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

7.6.4 Properties

7.6.5 Collation as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Printer collation.
Notes: See kCollation* constants for descriptions of collation.
The default value is kCollationDefault.

Printing uses default value of printer's collation if an invalid value is provided for the specific printer.

This value is ignored in PrintToPdf method.
(Read and Write property)

7.6.6 ColorMode as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Printer color mode.
Notes: See kColorMode* constants for descriptions of color modes.
The default value is kColorModeDefault.

Printing uses default value of printer supported color if an invalid value is provided for the specific printer.
(Read and Write property)

7.6.7 Copies as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Number of copies to print.
Notes: Minimum value is 1 and the maximum copies count is 999. The default value is 1.
(Read and Write property)

7.6.8 Duplex as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Printer duplex settings.
Notes: See kDuplex* constants for descriptions of duplex.
The default value is CoreWebView2PrintDuplex.Default.
Printing uses default value of printer's duplex if an invalid value is provided for the specific printer.
This value is ignored in PrintToPdf method.
(Read and Write property)

7.6.9 FooterURI as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The URI in the footer if ShouldPrintHeaderAndFooter is true.
Notes: The default value is the current URI. If an empty string value is provided, no URI is shown in the footer.
(Read and Write property)

7.6.10 HeaderTitle as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The title in the header if ShouldPrintHeaderAndFooter is true.
Notes: The default value is the title of the current document. If an empty string value is provided, no title is shown in the header.
(Read and Write property)

7.6.11 MarginBottom as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The bottom margin in inches.
Notes: The default is 1 cm, or
textasciitilde 0.4 inches. A margin cannot be less than zero. If an invalid value is provided, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.12 MarginLeft as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The left margin in inches.
Notes: The default is 1 cm, or
textasciitilde 0.4 inches. A margin cannot be less than zero. If an invalid value is provided, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.13 MarginRight as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The right margin in inches.
Notes: The default is 1 cm, or
textasciitilde 0.4 inches. A margin cannot be less than zero. If an invalid value is provided, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.14 MarginTop as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The top margin in inches.
Notes: The default is 1 cm, or
textasciitilde 0.4 inches. A margin cannot be less than zero. If an invalid value is provided, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.15 Orientation as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The orientation can be portrait or landscape.
Notes: The default orientation is portrait. See kOrientation* constants.
(Read and Write property)

7.6.16 PageHeight as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The page height in inches.
Notes: The default height is 11 inches. If the provided page height is less than or equal to zero, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.17 PageRanges as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Page range to print.
Notes: Defaults to empty string, which means print all pages. The PageRanges property is a list of page ranges specifying one or more pages that should be printed separated by commas. Any whitespace between page ranges is ignored. A valid page range is either a single integer identifying the page to print, or a range in the form [start page] - [last page] where start page and last page are integers identifying the first and last inclusive pages respectively to print. Every page identifier is an integer greater than 0 unless wildcards are used (see below examples). The first page is 1.

In a page range of the form [start page] - [last page] the start page number must be larger than 0 and less than or equal to the document's total page count. If the start page is not present, then 1 is used as the start page. The last page must be larger than the start page. If the last page is not present, then the document

total page count is used as the last page.

Repeating a page does not print it multiple times. To print multiple times, use the Copies property.

The pages are always printed in ascending order, even if specified in non-ascending order.
If page range is not valid or if a page is greater than document total page count, ArgumentException is thrown.

The following examples assume a document with 20 total pages.

Example	Result	Notes
"2"	Page 2	
"1-4, 9, 3-6, 10, 11"	Pages 1-6, 9-11	
"1-4, -6"	Pages 1-6	The "-6" is interpreted as "1-6".
"2-"	Pages 2-20	The "2-" is interpreted as "pages 2 to the end of the document".
"4-2, 11, -6"	Invalid	"4-2" is an invalid range.
"-"	Pages 1-20	The "-" is interpreted as "page 1 to the end of the document".
"1-4dsf, 11"	Invalid	
"2-2"	Page 2	

(Read and Write property)

7.6.18 PagesPerSide as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: Prints multiple pages of a document on a single piece of paper.
Notes: Choose from 1, 2, 4, 6, 9 or 16. The default value is 1.

If an invalid value is provided, ArgumentException is thrown.

Below examples shows print output for PagesPerSide and Duplex.

PagesPerSide	Total pages	Two-sided printing	Result
1	1	-	1 page on the front side.
2	1	Yes	1 page on the front side.
2	4	-	2 pages on the first paper and 2 pages on the next paper.
2	4	Yes	2 pages on the front side and 2 pages on back side.
4	4	Yes	4 pages on the front side.
4	8	Yes	4 pages on the front side and 4 pages on the back side.

(Read and Write property)

7.6.19 PageWidth as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The page width in inches.
Notes: The default width is 8.5 inches. If the provided page width is less than or equal to zero, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.20 PrinterName as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The name of the printer to use.
Notes: Defaults to empty string. If the printer name is empty string or null, then it prints to the default printer on the user OS.

If provided printer name doesn't match with the name of any installed printers on the user OS, the method returns with CoreWebView2PrintStatus.PrinterUnavailable.

Use DeviceInformation.FindAllAsync to get the list of local printers with AQS as "System.Devices.HardwareIds:
textasciitilde
textasciitilde "PRINTENUM\LocalPrintQueue""

This value is ignored in PrintToPdf method
(Read and Write property)

7.6.21 ScaleFactor as Double

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The scale factor is a value between 0.1 and 2.0.
Notes: The default is 1.0. If an invalid value is provided, the current value is not changed and an ArgumentException is thrown.
(Read and Write property)

7.6.22 ShouldPrintBackgrounds as Boolean

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: True if background colors and images should be printed.
Notes: The default value is false.
(Read and Write property)

7.6.23 ShouldPrintHeaderAndFooter as Boolean

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: True if header and footer should be printed.
Notes: The default value is false. The header consists of the date and time of printing, and the title of the page. The footer consists of the URI and page number. The height of the header and footer is 0.5 cm, or textasciitilde 0.2 inches.
(Read and Write property)

7.6.24 ShouldPrintSelectionOnly as Boolean

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: True if only the current end user's selection of HTML in the document should be printed.
Notes: The default value is false.
(Read and Write property)

7.6.25 Constants

Collation

Constant	Value	Description
kCollationCollated	1	Indicate that the collation has been selected for the printed output.
kCollationDefault	0	The default collation for a printer.
kCollationUncollated	2	Indicate that the collation has not been selected for the printed output.

Color Modes

Constant	Value	Description
kColorModeColor	1	Indicate that the printed output will be in color.
kColorModeDefault	0	The default color mode for a printer.
kColorModeGrayScale	2	Indicate that the printed output will be in shades of gray.

Duplex Modes

Constant	Value	Description
kDuplexDefault	0	The default duplex for a printer.
kDuplexOneSided	1	Print on only one side of the sheet.
kDuplexTwoSidedLongEdge	2	Print on both sides of the sheet, flipped along the long edge.
kDuplexTwoSidedShortEdge	3	Print on both sides of the sheet, flipped along the short edge.

Orientations

Constant	Value	Description
kOrientationLandscape	1	Print the page(s) in landscape orientation.
kOrientationPortrait	0	Print the page(s) in portrait orientation.

7.7 class WebView2WindowFeaturesMBS

7.7.1 class WebView2WindowFeaturesMBS

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The window features for a WebView popup window.
Notes: The fields match the windowFeatures passed to window.open as specified in Window features on MDN. There is no requirement for you to respect the values. If your app does not have corresponding UI features (for example, no toolbar) or if all instance of WebView are opened in tabs and do not have distinct size or positions, then your app does not respect the values. You may want to respect values, but perhaps only some apply to the UI of you app. Accordingly, you may respect all, some, or none of the properties as appropriate for your app. For all numeric properties, if the value that is passed to window.open is outside the range of an unsigned 32bit int, the resulting value is the absolute value of the maximum for unsigned 32bit integer. If you are not able to parse the value an integer, it is considered 0. If the value is a floating point value, it is rounded down to an integer.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins in version 21.5
- MonkeyBread Software Releases the MBS Xojo Plugins in version 21.5
- MBS Xojo Plugins, version 21.5pr5

7.7.2 Methods

7.7.3 Constructor

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

7.7.4 Properties

7.7.5 HasPosition as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies left and top values.
Notes: (Read and Write property)

7.7.6 HasSize as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies height and width values.
Notes: (Read and Write property)

7.7.7 Height as Integer

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the height of the window.
Notes: Minimum value is 100. If HasSize is set to false, this field is ignored.
(Read and Write property)

7.7.8 Left as Integer

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the left position of the window.
Notes: If HasPosition is set to false, this field is ignored.
(Read and Write property)

7.7.9 ShouldDisplayMenuBar as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Indicates that the menu bar is displayed.
Notes: (Read and Write property)

7.7.10 ShouldDisplayScrollBars as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Indicates that the scroll bars are displayed.
Notes: (Read and Write property)

7.7.11 ShouldDisplayStatus as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Indicates that the status bar is displayed.
Notes: (Read and Write property)

7.7.12 ShouldDisplayToolbar as Boolean

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Indicates that the browser toolbar is displayed.
Notes: (Read and Write property)

7.7.13 Top as Integer

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the top position of the window.
Notes: If HasPosition is set to false, this field is ignored.
(Read and Write property)

7.7.14 Width as Integer

Plugin Version: 21.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the width of the window.
Notes: Minimum value is 100. If HasSize is set to false, this field is ignored.
(Read and Write property)

Chapter 8

Windows Location

8.1 class WindowsLocationExceptionMBS

8.1.1 class WindowsLocationExceptionMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for errors in the Windows Location API.
Notes: Subclass of the RuntimeException class.
Blog Entries

- News from the MBS Xojo Plugins Version 20.4
- MBS Xojo Plugins, version 20.4pr2

8.2 class WindowsLocationManagerMBS

8.2.1 class WindowsLocationManagerMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for accessing Location API on Windows.
Notes: You may need to StartEvents to later query location or receive events.

see MSDN for details:
https://docs.microsoft.com/en-us/windows/win32/locationapi/windows-location-api-portal

See CLLocationManagerMBS class for macOS.
Blog Entries

- News from the MBS Xojo Plugins Version 20.4
- MBS Xojo Plugins, version 20.4pr2

Xojo Developer Magazine

- 22.2, page 66: Find Yourself, How to determine the location of devices with MBS under Windows and Mac by Stefanie Juchmes-Simonis

8.2.2 Methods

8.2.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The constructor.

8.2.4 RequestPermissions(win as DesktopWindow)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Opens a system dialog box to request user permission to enable location devices.
Notes: win: the parent window for the dialog.
See also:

- 8.2.5 RequestPermissions(win as window) 297

8.2.5 RequestPermissions(win as window)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Opens a system dialog box to request user permission to enable location devices.
Notes: win: the parent window for the dialog.
See also:

- 8.2.4 RequestPermissions(win as DesktopWindow) 296

8.2.6 StartEvents(RequestedReportInterval as Integer = 0)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Starts events.
Notes: Should be called once to start events and get LocationChanged or StatusChanged to work.

8.2.7 StopEvents

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Stop events.

8.2.8 Properties

8.2.9 DesiredAccuracy as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current requested accuracy setting.
Notes: See kLocationDesiredAccuracyHigh and kLocationDesiredAccuracyDefault constants.
(Read and Write property)

8.2.10 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read and Write property)

8.2.11 Report as WindowsLocationMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves a location report.
Notes: When Report is called, it may result in a notification being displayed in the taskbar, and a Location Activity event being logged in Event Viewer, if it is the application's first use of location.
(Read only property)

8.2.12 ReportInterval as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The requested amount of time, in milliseconds, between report events.
Notes: If this value is set to zero, no minimum interval is specified and your application receives events at the location sensor's default interval.
(Read and Write property)

8.2.13 ReportStatus as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the status for the specified report type.
Notes: (Read only property)

8.2.14 Events

8.2.15 LocationChanged(Report as WindowsLocationMBS)

Plugin Version: 20.4, Platform: Windows, Targets: .

Function: Called when a new location report is available.
Notes: If the application calls LocationChanged as a result of its first use of location, the call might cause a notification to appear in the taskbar, and cause a Location Activity event to be logged in Event Viewer.

8.2.16 StatusChanged(Status as Integer)

Plugin Version: 20.4, Platform: Windows, Targets: .

Function: Called when a report status changes.
Notes: This event provides report status for new reports. The most recent reports remain available through

GetReport, regardless of the status reported by this event.

8.2.17 Constants

Location Desired Accuracy

Constant	Value	Description
kLocationDesiredAccuracyDefault	0	The sensor should use the accuracy for which it can optimize power use an other cost considerations.
kLocationDesiredAccuracyHigh	1	The sensor should deliver the most accurate report possible. This include using services that might charge money, or consuming higher levels of batter power or connection bandwidth.

Location Report Status

Constant	Value	Description
kLocationReportStatusAccessDenied	2	No permissions have been granted to access this report type. Call Request missions.
kLocationReportStatusError	1	There was an error when creating the report, or location providers for requested type are unable to provide any data. Location providers migh currently unavailable, or location providers cannot obtain any data. For ex ple, this state may occur when a GPS sensor is indoors and no satellites a view.
kLocationReportStatusInitializing	3	The report is being initialized.
kLocationReportStatusNotSupported	0	The requested report type is not supported by the API. No location prov of the requested type are installed.
kLocationReportStatusRunning	4	The report is running. New location data for the requested report ty available.

8.3 class WindowsLocationMBS

8.3.1 class WindowsLocationMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: WindowsLocationMBS represents a location report that contains information in the form of latitude and longitude.
Notes: Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 20.4
- MBS Xojo Plugins, version 20.4pr2

Xojo Developer Magazine

- 22.2, page 67: Find Yourself, How to determine the location of devices with MBS under Windows and Mac by Stefanie Juchmes-Simonis

8.3.2 Methods

8.3.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

8.3.4 Properties

8.3.5 Altitude as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the altitude, in meters.
Notes: Altitude is relative to the reference ellipsoid.

The Altitude property retrieves the altitude relative to the reference ellipsoid that is defined by the latest revision of the World Geodetic System (WGS 84), rather than the altitude relative to sea level.

Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
(Read only property)

8.3.6 AltitudeError as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the altitude error, in meters.
Notes: Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
(Read only property)

8.3.7 DateTime as DateTime

Plugin Version: 20.5, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the date and time when the report was generated.
Notes: Time stamps are provided as Coordinated Universal Time (UTC).
(Read only property)

8.3.8 ErrorRadius as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves a distance from the reported location, in meters.
Notes: Combined with the location reported as the origin, this radius describes the circle in which the actual location is probably located.

Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
(Read only property)

8.3.9 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read and Write property)

8.3.10 Latitude as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the latitude, in degrees.
Notes: The latitude is between -90 and 90, where north is positive.

Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
(Read only property)

8.3.11 Longitude as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the longitude, in degrees.
Notes: The longitude is between -180 and 180, where East is positive.

Querying the property may raise a WindowsLocationExceptionMBS if this field is not available.
(Read only property)

8.3.12 SensorID as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the ID of the sensor that generated the location report.
Notes: Provided as formatted UUID.
Maybe all zero if ID is not provided by OS.
(Read only property)

8.3.13 Timestamp as Date

Plugin Version: 20.4, Platform: Windows, Targets: Desktop, Console & Web.

Function: Retrieves the date and time when the report was generated.
Notes: Time stamps are provided as Coordinated Universal Time (UTC).
(Read only property)

Chapter 9

Windows Media Foundation

9.1 class MFPMediaItemMBS

9.1.1 class MFPMediaItemMBS

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: An item to playback.
Notes: Can be loaded asynchronously before playing, so you can preload the next file while another is playing.
For Windows 7, Windows Server 2008 R2 or newer.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.2
- MBS Xojo Plugins, version 23.2pr1
- MBS Xojo Plugins, version 19.6pr4

9.1.2 Methods

9.1.3 Constructor

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

9.1.4 PresentationAttribute(UUID as String) as Variant

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the media item for a presentation attribute.
Notes: see
https://docs.microsoft.com/windows/win32/medfound/presentation-descriptor-attributes

If needed a future MBS Plugin version could include explicit properties for some of those values.

9.1.5 StreamAttribute(index as Integer, UUID as String) as Variant

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the media item for a stream attribute.
Notes: see
https://docs.microsoft.com/windows/win32/medfound/stream-descriptor-attributes

9.1.6 Properties

9.1.7 AudioBitsPerSample as Variant

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Number of bits per audio sample in an audio media type.
Notes: e.g. 16
(Read only property)

9.1.8 AudioChannels as Variant

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Number of audio channels in an audio media type.
Notes: e.g. 1
(Read only property)

9.1.9 AudioSamplesPerSecond as Variant

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Number of audio samples per second in an audio media type.
Notes: e.g. 44100
(Read only property)

9.1.10 CanPause as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The media item can pause.
Notes: If this flag is absent, the Pause method will likely fail.
(Read only property)

9.1.11 CanSeek as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The media item supports seeking.
Notes: If this flag is absent, setting the Position property will fail.
(Read only property)

9.1.12 Duration as Double

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the duration of the media item.
Notes: (Read only property)

9.1.13 Handle as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

9.1.14 HasAudio as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries whether the media item contains an audio stream.
Notes: Returns the value true if the media item contains at least one audio stream, or false otherwise.

(Read only property)

9.1.15 HasAudioSelected as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries whether the media item contains an audio stream.
Notes: Returns the value true if at least one audio stream is selected, or false otherwise.

To select or deselect streams before playback starts, set StreamSelection(index).
(Read only property)

9.1.16 HasSlowSeek as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Seeking can take a long time.
Notes: For example, the source might download content through HTTP.
(Read only property)

9.1.17 HasVideo as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries whether the media item contains a video stream.
Notes: Returns the value true if the media item contains at least one video stream, or false otherwise.
(Read only property)

9.1.18 HasVideoSelected as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries whether the media item contains a video stream.
Notes: Returns the value true if at least one video stream is selected, or false otherwise.

To select or deselect streams before playback starts, set StreamSelection(index).
(Read only property)

9.1.19 IsLive as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The media item represents a live data source, such as video camera.
Notes: If playback is stopped and then restarted, there will be a gap in the content.
(Read only property)

9.1.20 IsProtected as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries whether the media item contains protected content.
Notes: If true then the media item contains protected content. Attempting to play this media item will cause a playback error.
(Read only property)

9.1.21 Metadata as Dictionary

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a dictionary that contains metadata for the source, such as author or title.
Notes: (Read only property)

9.1.22 NumberOfStreams as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the number of streams (audio, video, and other) in the media item.
Notes: (Read only property)

9.1.23 StartPosition as Double

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The start time for the media item.
Notes: The adjusted start and stop times are used the next time that SetMediaItem is called with this media item. If the media item is already set on the player, the change does not happen unless you call SetMediaItem again.
(Read and Write property)

9.1.24 StopPosition as Double

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The stop time for the media item.
Notes: The adjusted start and stop times are used the next time that SetMediaItem is called with this media item. If the media item is already set on the player, the change does not happen unless you call SetMediaItem again.
(Read and Write property)

9.1.25 Tag as Variant

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The tag value associated with this plugin object.
Notes: Can be used freely by you.
(Read and Write property)

9.1.26 URL as String

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the URL that was used to create the media item.
Notes: (Read only property)

9.1.27 VideoFrameRate as Variant

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Frame rate of a video media type, in frames per second.
Notes: The frame rate is expressed as a ratio. The upper 32 bits of the attribute value contain the numerator and the lower 32 bits contain the denominator. For example, if the frame rate is 30 frames per second (fps), the ratio is 30/1. If the frame rate is 29.97 fps, the ratio is 30,000/1001.

e.g. 2147483648016679, which gives with BitWise.ShiftRight(v, 32) the value 500000 and with BitWise-And(v, &hFFFFFFFF) the value 16679. 500000/16679 gives 29.97.
(Read only property)

9.1.28 StreamSelection(index as Integer) as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Selects or deselects a stream.
Notes: Zero-based index of the stream. To get the number of streams, call NumberOfStreams.

Set to true: The stream is selected. During playback, this stream will play.
Set to false: The stream is not selected. During playback, this stream will not play.
(Read and Write computed property)

9.2 class MFPMediaPlayerExceptionMBS

9.2.1 class MFPMediaPlayerExceptionMBS

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for an error with MFPMediaPlayerMBS class.
Notes: See ErrorCode and Message properties.
Subclass of the RuntimeException class.
Blog Entries

- MBS Xojo Plugins, version 19.6pr4

9.3 class MFPMediaPlayerMBS

9.3.1 class MFPMediaPlayerMBS

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The Windows Media Foundation Media Player class.
Notes: An alternative movie and audio player for Xojo.
For Windows 7, Windows Server 2008 R2 or newer.
Blog Entries

- News from the MBS Xojo Plugins Version 20.1
- MBS Xojo Plugins, version 20.1pr5
- New in the MBS Xojo Plugins 20.0
- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.0
- MBS Xojo Plugins, version 19.6pr4

Videos

- XDC 2020 MBS Plugins Presentation

Xojo Developer Magazine

- 18.3, page 51: Happy Birthday MonkeyBread Software, What is new in the MBS Xojo Plugins by Stefanie Juchmes

9.3.2 Methods

9.3.3 ClearMediaItem

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Clears the current media item.
Notes: This method stops playback and releases the player object's references to the current media item. This method completes asynchronously. When the operation completes, the MediaItemCleared event is invoked. The event type is

9.3.4 Constructor(URL as String = "", StartPlayback as Boolean = false)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance of the MFPlay player object for audio only.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Please call this in main thread of application only.
See also:

- 9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl) 312
- 9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl) 313
- 9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer) 313
- 9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow) 314
- 9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window) 315

9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Creates a new instance of the MFPlay player object.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Control: A reference to a control where the video will appear. For audio-only playback, this parameter can be nil.

The control specified is used for the first selected video stream in the source.
If control is nil, MFPlay will not display any video.

Please call this in main thread of application only.
See also:

- 9.3.4 Constructor(URL as String = "", StartPlayback as Boolean = false) 311

- 9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl) 313
- 9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer) 313
- 9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow) 314
- 9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window) 315

9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop only.

Function: Creates a new instance of the MFPlay player object.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Control: A reference to a control where the video will appear. For audio-only playback, this parameter can be nil.

The control specified is used for the first selected video stream in the source.
If control is nil, MFPlay will not display any video.

Please call this in main thread of application only.
See also:

- 9.3.4 Constructor(URL as String = "", StartPlayback as Boolean = false) 311
- 9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl) 312
- 9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer) 313
- 9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow) 314
- 9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window) 315

9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance of the MFPlay player object.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If

the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Handle: A handle to a window or control where the video will appear. For audio-only playback, this parameter can be nil.

The window specified is used for the first selected video stream in the source.

If windows is nil, MFPlay will not display any video.

Please call this in main thread of application only.
See also:

- 9.3.4 Constructor(URL as String = ””, StartPlayback as Boolean = false) 311
- 9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl) 312
- 9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl) 313
- 9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow) 314
- 9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window) 315

9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Creates a new instance of the MFPlay player object.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Win: A reference to a window where the video will appear. For audio-only playback, this parameter can be nil.

The window specified is used for the first selected video stream in the source.

If windows is nil, MFPlay will not display any video.

Please call this in main thread of application only.
See also:

- 9.3.4 Constructor(URL as String = "", StartPlayback as Boolean = false) 311
- 9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl) 312
- 9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl) 313
- 9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer) 313
- 9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window) 315

9.3.9 Constructor(URL as String, StartPlayback as Boolean, win as Window)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop only.

Function: Creates a new instance of the MFPlay player object.
Notes: URL: The string that contains the URL of a media file to open. This parameter can be empty. If the parameter is empty, StartPlayback must be false.
If this parameter is empty, you can open a URL later by calling CreateMediaItemFromURL.

StartPlayback: If true, playback starts automatically. If false, playback does not start until the application calls Play method. If URL is empty, this parameter is ignored.

Win: A reference to a window where the video will appear. For audio-only playback, this parameter can be nil.

The window specified is used for the first selected video stream in the source.

If windows is nil, MFPlay will not display any video.

Please call this in main thread of application only.
See also:

- 9.3.4 Constructor(URL as String = "", StartPlayback as Boolean = false) 311
- 9.3.5 Constructor(URL as String, StartPlayback as Boolean, control as DesktopControl) 312
- 9.3.6 Constructor(URL as String, StartPlayback as Boolean, control as RectControl) 313
- 9.3.7 Constructor(URL as String, StartPlayback as Boolean, Handle as Integer) 313
- 9.3.8 Constructor(URL as String, StartPlayback as Boolean, win as DesktopWindow) 314

9.3.10 CreateMediaItemFromURL(URL as String, Sync as Boolean = true, tag as Variant = nil) as MFPMediaItemMBS

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a media item from a URL.
Notes: URL: String that contains the URL of a media file.
Sync: If true, the method blocks until it completes. If false, the method does not block and completes asynchronously.

If fSync is true, we return the item on success.

This method does not queue the media item for playback. To queue the item for playback, set MediaItem property.

The CreateMediaItemFromURL method can be called either synchronously or asynchronously:

If Sync is true, the method completes synchronously and returns the new item.
If Sync is false, the method completes asynchronously. When the operation completes, the MediaItemCreated event is invoked. The event call passes the new media item.

If you make multiple asynchronous calls to CreateMediaItemFromURL, they are not guaranteed to complete in the same order. Use the tag to pass data to the event.

Currently, this method raises an error if the URL specifies any of the following protocols: rtsp*, mms*, or mcast.

9.3.11 FrameStep

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Steps forward one video frame.
Notes: This method completes asynchronously. When the operation completes, the FrameStepped event is raised.

The player object does not support frame stepping during reverse playback (that is, while the playback rate is negative).

9.3.12 GetVideoSourceRect(byref Left as Single, byref Top as Single, byref Right as Single, byref Bottom as Single)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the video source rectangle.
Notes: This rectangle defines which portion of the video is displayed. It is specified in normalized coordinates, which are defined as follows:
The upper-left corner of the video image is (0, 0).
The lower-right corner of the video image is (1, 1).
If the source rectangle is { 0, 0, 1, 1 } , the entire image is displayed. This is the default value.

9.3.13 InsertEffect(CLSID as String, isOptional as boolean = false) as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Applies an audio or video effect to playback.
Notes: Please pass class id of a Media Foundation transform (MFT) that implements the effect. MFTs expose the IMFTransform interface.

isOptional specifies whether the effect is optional.

Value	Meaning
True	The effect is optional. If the MFPlay player object cannot add the effect, it ignores the effect and continues playback.
False	If the MFPlay player object cannot add the effect, a playback error occurs.

Returns index of the effect, which you pass for RemoveEffect later if needed.

The effect is applied to any media items set after the method is called. It is not applied to the current media item.

For each media item, the effect is applied to the first selected stream of the matching type (audio or video). If a media item has two selected streams of the same type, the second stream does not receive the effect. The effect is ignored if the media item does not contain a stream that matches the effect type. For example, if you set a video effect and play a file that contains just audio, the video effect is ignored, although no error is raised.

The effect is applied to all subsequent media items, until the application removes the effect. To remove an effect, call RemoveEffect or RemoveAllEffects.

If you set multiple effects of the same type (audio or video), they are applied in the same order in which you

call InsertEffect.

Remote Playback Optimizations

Audio and video effects might be incompatible with optimizations that are used for remote playback. The following remarks apply only to audio or video effects that are actually used during playback:
If you mark an audio or video effect as required, by setting fOptional to false, MFPlay disables remote playback optimizations.
Otherwise, if all audio/video effects are marked as optional, MFPlay might drop the effects, in order to enable remote playback optimizations.
In other words, required effects have priority over remote optimizations, but optional effects do not.

Non-audio, non-video effects do not affect remote optimizations. Also, if you insert a required effect but the source does not contain any streams of that type, remote optimizations are not disabled.

9.3.14 Pause

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Pauses playback.
Notes: While playback is paused, the most recent video frame is displayed, and audio is silent.

This method completes asynchronously. When the operation completes, the application's Paused event is invoked.

9.3.15 Play

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Starts playback.
Notes: This method completes asynchronously. When the operation completes, the Started event is raised.

9.3.16 RemoveAllEffects

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Removes all effects that were added with the InsertEffect method.
Notes: The change applies to the next media item that is set on the player. The effects are not removed from the current media item.

9.3.17 RemoveEffect(Handle as Integer)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Removes an effect that was added with the InsertEffect method.
Notes: Please pass the number returned by InsertEffect.

The change applies to the next media item that is set on the player. The effect is not removed from the current media item.

9.3.18 SetVideoSourceRect(Left as Single, Top as Single, Right as Single, Bottom as Single)

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Sets the video source rectangle.
Notes: MFPlay clips the video to this rectangle and stretches the rectangle to fill the video window.

This rectangle defines which portion of the video is displayed. It is specified in normalized coordinates, which are defined as follows:
The upper-left corner of the video image is (0, 0).
The lower-right corner of the video image is (1, 1).

To display the entire image, set the source rectangle to { 0, 0, 1, 1 } . This is the default value.

MFPlay stretches the source rectangle to fill the entire video window. By default, MFPlay maintains the source's correct aspect ratio, letterboxing if needed. The letterbox color is controlled by the BorderColor property.

This method fails if no media item is currently set, or if the current media item does not contain video.
To set the video position before playback starts, call this method inside your MediaItemSet event.

9.3.19 Shutdown

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Shuts down the MFPlay player object and releases any resources the object is using.
Notes: After this method is called, most IMFPMediaPlayer methods raise exception about shutdown. Also, any media items created from this instance of the player object are invalidated and most IMFPMediaItem methods also raise exceptions.

The player object automatically shuts itself down when its reference count reaches zero. You can use the Shutdown method to shut down the player before all of the references have been released.

9.3.20 Stop

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Stops playback.
Notes: This method completes asynchronously. When the operation completes, the Stopped event is raised.

9.3.21 UpdateVideo

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Updates the video frame.
Notes: This method makes sure the video is updated now, not later.

9.3.22 Properties

9.3.23 AspectRatioMode as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current aspect-ratio correction mode.
Notes: This mode controls whether the aspect ratio of the video is preserved during playback.
See VideoARMode* constants.
(Read and Write property)

9.3.24 Balance as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current audio balance.
Notes: The value can be any number in the following range (inclusive).

Value	Meaning
-1.0	The left channel is at full volume; the right channel is silent.
+1.0	The right channel is at full volume; the left channel is silent.

If the value is zero, the left and right channels are at equal volumes. The default value is zero.
(Read and Write property)

9.3.25 BorderColor as Color

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current color of the video border.
Notes: The border color is used to letterbox the video.
(Read and Write property)

9.3.26 Duration as Double

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the playback duration of the current media item.
Notes: This method calculates the playback duration, taking into account the start and stop times for the media item. To set the start and stop times, use StartPosition and StopPosition properties on the media item. To get the actual duration of the underlying media file, regardless of start and stop times, use Duration property on the item.

For example, suppose that you load a 30-second audio file and set the start time equal to 2 seconds and stop time equal to 10 seconds. The MFPMediaItemMBS.Duration method will return 30 seconds, but the MFPMediaPlayerMBS.Duration method will return 8 seconds.
(Read only property)

9.3.27 FastestSupportedRateForward as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the fastest supported forward playback rates.
Notes: Playback rates are expressed as a ratio of the current rate to the normal rate. For example, 1.0 indicates normal playback speed, 0.5 indicates half speed, and 2.0 indicates twice speed. Positive values indicate forward playback, and negative values indicate reverse playback.
(Read only property)

9.3.28 FastestSupportedRateReverse as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the fastest supported reverse playback rates.
Notes: Playback rates are expressed as a ratio of the current rate to the normal rate. For example, 1.0 indicates normal playback speed, 0.5 indicates half speed, and 2.0 indicates twice speed. Positive values indicate forward playback, and negative values indicate reverse playback.
(Read only property)

9.3.29 Handle as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

9.3.30 IdealVideoMaxHeight as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum height of video size that can be displayed without significantly degrading performance or image quality.
Notes: (Read only property)

9.3.31 IdealVideoMaxWidth as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum width of video sizes that can be displayed without significantly degrading performance or image quality.
Notes: (Read only property)

9.3.32 IdealVideoMinHeight as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum height of video sizes that can be displayed without significantly degrading performance or image quality.
Notes: (Read only property)

9.3.33 IdealVideoMinWidth as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the minimum width of video sizes that can be displayed without significantly degrading performance or image quality.
Notes: (Read only property)

9.3.34 Looping as Boolean

Plugin Version: 20.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Whether to loop video.
Notes: If set to true, the plugin will call Play automatically when playback ended.
(Read and Write property)

9.3.35 MediaItem as MFPMediaItemMBS

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Current media item.
Notes: Setting the MediaItem property is asynchronous. Therefore, while set is pending, get will not return the media item that was just set. Instead, the application should implement MediaItemSet event to know when it is done.
(Read and Write property)

9.3.36 Mute as Boolean

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Whether the audio is muted.
Notes: (Read and Write property)

9.3.37 NativeVideoAspectRateHeight as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The picture aspect ratio of the video.
Notes: (Read only property)

9.3.38 NativeVideoAspectRateWidth as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The picture aspect ratio of the video.
Notes: (Read only property)

9.3.39 NativeVideoHeight as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The height of the video, in pixels.
Notes: (Read only property)

9.3.40 NativeVideoWidth as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The width of the video, in pixels.
Notes: (Read only property)

9.3.41 Position as Double

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The playback position.
Notes: If you call this method while playback is stopped, the new position takes effect after playback resumes.

This method completes asynchronously. When the operation completes, the PositionSet event is raised.
If playback was started before SetPosition is called, playback resumes at the new position. If playback was paused, the video is refreshed to display the current frame at the new position.

If you make two consecutive calls to SetPosition, and the second call is made before the first call has completed, the second call supersedes the first. The status code for the superseded call is set to false in the event data for that call. This behavior prevents excessive latency from repeated calls to SetPosition, as each call may force the media source to perform a relatively lengthy seek operation.
(Read and Write property)

9.3.42 Rate as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current playback rate.
Notes: The playback rate is expressed as a ratio of the current rate to the normal rate. For example, 1.0 indicates normal playback, 0.5 indicates half speed, and 2.0 indicates twice speed. Positive values indicate forward playback, and negative values indicate reverse playback.
(Read and Write property)

9.3.43 SlowestSupportedRateForward as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the slowest supported forward playback rates.
Notes: Playback rates are expressed as a ratio of the current rate to the normal rate. For example, 1.0 indicates normal playback speed, 0.5 indicates half speed, and 2.0 indicates twice speed. Positive values indicate forward playback, and negative values indicate reverse playback.
(Read only property)

9.3.44 SlowestSupportedRateReverse as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries the slowest supported reverse playback rates.
Notes: Playback rates are expressed as a ratio of the current rate to the normal rate. For example, 1.0 indicates normal playback speed, 0.5 indicates half speed, and 2.0 indicates twice speed. Positive values indicate forward playback, and negative values indicate reverse playback.
(Read only property)

9.3.45 State as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The current playback state of the MFPlay player object.
Notes: See State* constants.

This property can be read after the player object has been shut down.

Many of the player methods complete asynchronously. While an asynchronous operation is pending, the current state is not updated until the operation completes. When the operation completes, the application receives an event.

(Read only property)

9.3.46 VideoWindow as Integer

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the window where the video is displayed.
Notes: Returns HWND as integer.
(Read only property)

9.3.47 Volume as Single

Plugin Version: 20.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The audio volume.
Notes: Volume is expressed as an attenuation level, where 0.0 indicates silence and 1.0 indicates full volume (no attenuation).

If you call this method before playback starts, the setting is applied after playback starts.
This method does not change the master volume level for the player's audio session. Instead, it adjusts the per-channel volume levels for audio stream(s) that belong to the current media item. Other streams in the audio session are not affected.
(Read and Write property)

9.3.48 Events

9.3.49 Ended

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: Playback has ended.
Notes: The player object sends this event when playback reaches the end of the media file.

9.3.50 Error

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: A playback error has occurred.

9.3.51 FrameStepped

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: A frame-step operation has completed.
Notes: This event is sent when the FrameStep method completes.

9.3.52 MediaItemCleared

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: The current media item was cleared.
Notes: This event is sent when the ClearMediaItem method completes.

9.3.53 MediaItemCreated(MediaItem as MFPMediaItemMBS, Tag as variant)

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: A new media item was created.
Notes: This event is sent when the CreateMediaItemFromURL method completes.

9.3.54 MediaItemSet

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: A media item is ready for playback.
Notes: This event is sent when the SetMediaItem method completes.

9.3.55 Paused

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: Playback has paused.
Notes: This event is sent when the Pause method completes.

9.3.56 PositionSet

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: The MFPlay player object has seeked to a new playback position.
Notes: This event is sent when the Position setter completes.

9.3.57 RateSet(rate as Single)

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: The playback rate has changed.
Notes: This event is sent when the rate setter completes.

9.3.58 Started

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: Playback has started.
Notes: This event is sent when the Play method completes.

9.3.59 Stopped

Plugin Version: 20.0, Platform: Windows, Targets: .

Function: Playback has stopped.
Notes: This event is sent when the Stop method completes.

9.3.60 Constants

States

Constant	Value	Description
StateEmpty	0	Initial state. No media items have been set on the player object.
StatePaused	3	Playback is paused.
StatePlaying	2	Playback is in progress.
StateShutdown	4	The player object was shut down. This state is returned after the application calls Shutdown method.
StateStopped	1	Playback is stopped.

Aspect Ratio Modes

Constant	Value	Description
VideoARModeMask	7	Bitmask to validate flag values. This value is not a valid flag.
VideoARModeNone	0	Do not maintain the aspect ratio of the video. Stretch the video to fit the output rectangle.
VideoARModeNonLinearStretch	4	Apply a non-linear horizontal stretch if the aspect ratio of the destination rectangle does not match the aspect ratio of the source rectangle. The non-linear stretch algorithm preserves the aspect ratio in the middle of the picture and stretches (or shrinks) the image progressively more toward the left and right. This mode is useful when viewing 4:3 content full-screen on a 16:9 display, instead of pillar-boxing. Non-linear vertical stretch is not supported, because the visual results are generally poor. This mode may cause performance degradation. If this flag is set, you must also set the VideoARModePreservePixel and VideoARModePreservePicture flags.
VideoARModePreservePicture	1	Preserve the aspect ratio of the video by letterboxing or within the output rectangle.
VideoARModePreservePixel	2	Correct the aspect ratio if the physical size of the display device does not match the display resolution. For example, if the native resolution of the monitor is 1600 by 1200 (4:3) but the display resolution is 1280 by 1024 (5:4), the monitor will display non-square pixels. If this flag is set, you must also set the VideoARModePreservePicture flag.

Chapter 10

Windows OCR

10.1 class WindowsOCREngineMBS

10.1.1 class WindowsOCREngineMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Provides optical character recognition (OCR) functionality.
Notes: Requires Windows 10 (introduced in 10.0.10240.0)

o use the OCR capabilities of the OcrEngineMBS class in your app, call the RecognizeAsync method. When you call the RecognizeAsync method of the OcrEngine class, the method returns an WindowsOCRResultMBS object, which contains the recognized text and its size and position. The result is split into lines, and the lines are split into words.

- The WindowsOCRResultMBS contains a collection of WindowsOCRLineMBS objects, which you access through the Lines property of the WindowsOCRResultMBS.
- Each WindowsOCRLineMBS object contains a collection of WindowsOCRWordMBS objects, which you access through the Words property of each WindowsOCRLineMBS.
- Each WindowsOCRWordMBS object specifies the text, size, and position information of the word in the image.

Our plugin class allows you to run the OCR operation either synchronously or asynchronously. The asynchronous operation runs in the background on a separated preemptive thread, so your application GUI is not blocked and this is the preferred way.

Alternatively, you can use the synchronous versions, which block the GUI.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr2
- MBS Xojo Plugins, version 23.1pr1

Xojo Developer Magazine

- 21.3, page 48: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes

10.1.2 Methods

10.1.3 Available as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Whether this class is available.
Example:

```
If WindowsOCREngineMBS.Available Then
// okay
Else
MessageBox "Only for Windows 10 and newer."
End If
```

Notes: Returns false on Windows 8.x.
Reports true on Windows 10240 or later.

10.1.4 AvailableRecognizerLanguages as WindowsOCRLanguageMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns an array of all available OCR languages on the device.
Example:

```
Dim languages() As WindowsOCRLanguageMBS = WindowsOCREngineMBS.AvailableRecognizerLanguages

For Each n As WindowsOCRLanguageMBS In languages
MessageBox n.DisplayName+", "+n.LanguageTag
Next
```

10.1.5 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance of the OcrEngine class.
Example:

```
Dim Recognizer As New WindowsOCREngine

MessageBox Recognizer.RecognizerLanguage.DisplayName
```

Notes: If any language from GlobalizationPreferences.Languages can be resolved to any of the available OCR languages returns new instance of OcrEngine class, otherwise otherwise raises UnsupportedOperationException.
See also:

- 10.1.6 Constructor(Language as WindowsOCRLanguageMBS) 333

10.1.6 Constructor(Language as WindowsOCRLanguageMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a new instance of the OcrEngine class.
Example:

```
Dim Recognizer As New WindowsOCREngine("de-DE")

MessageBox Recognizer.RecognizerLanguage.DisplayName
```

Notes: If the specified language can be resolved to any of the OCR languages available on the device, returns new instance of OcrEngine class, otherwise raises UnsupportedOperationException.

Raises PlatformNotSupportedException when called on macOS or Linux.
See also:

- 10.1.5 Constructor 333

10.1.7 Destructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

10.1.8 IsLanguageSupported(Language as WindowsOCRLanguageMBS) as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Returns true if a specified language can be resolved to any of the available OCR languages.
Notes: True, if the specified language can be resolved to any of the available OCR languages; otherwise, false.

10.1.9 RecognizeAsync(ImageFile as FolderItem)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image file and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
Calls event RecognizeCompleted later.
See also:

- 10.1.10 RecognizeAsync(Picture as Picture) 334
- 10.1.11 RecognizeAsync(PictureData as MemoryBlock) 334
- 10.1.12 RecognizeAsync(PictureData as String) 335

10.1.10 RecognizeAsync(Picture as Picture)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We build a bitmap from the picture for Windows and then run OCR.
Calls event RecognizeCompleted later.
See also:

- 10.1.9 RecognizeAsync(ImageFile as FolderItem) 334
- 10.1.11 RecognizeAsync(PictureData as MemoryBlock) 334
- 10.1.12 RecognizeAsync(PictureData as String) 335

10.1.11 RecognizeAsync(PictureData as MemoryBlock)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image data provided and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
Calls event RecognizeCompleted later.
See also:

- 10.1.9 RecognizeAsync(ImageFile as FolderItem) 334
- 10.1.10 RecognizeAsync(Picture as Picture) 334
- 10.1.12 RecognizeAsync(PictureData as String) 335

10.1.12 RecognizeAsync(PictureData as String)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image data provided and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
Calls event RecognizeCompleted later.
See also:

- 10.1.9 RecognizeAsync(ImageFile as FolderItem) 334
- 10.1.10 RecognizeAsync(Picture as Picture) 334
- 10.1.11 RecognizeAsync(PictureData as MemoryBlock) 334

10.1.13 RecognizeSync(ImageFile as FolderItem) as WindowsOCRResultMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image file and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
We run loops to wait and yield time to threads while waiting for the job to finish.
On success, true is returned and result is set.
In case of error, the error parameter is set with a text.

Raises NilObjectException or WindowsOCRExceptionMBS in case of an error.
See also:

- 10.1.14 RecognizeSync(Picture as Picture) as WindowsOCRResultMBS 335
- 10.1.15 RecognizeSync(PictureData as MemoryBlock) as WindowsOCRResultMBS 336
- 10.1.16 RecognizeSync(PictureData as String) as WindowsOCRResultMBS 336

10.1.14 RecognizeSync(Picture as Picture) as WindowsOCRResultMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We build a bitmap from the picture for Windows and then run OCR.

Calls event RecognizeCompleted later.
We run loops to wait and yield time to threads while waiting for the job to finish.
On success, true is returned and result is set.
In case of error, the error parameter is set with a text.

Raises NilObjectException or WindowsOCRExceptionMBS in case of an error.
See also:

- 10.1.13 RecognizeSync(ImageFile as FolderItem) as WindowsOCRResultMBS 335
- 10.1.15 RecognizeSync(PictureData as MemoryBlock) as WindowsOCRResultMBS 336
- 10.1.16 RecognizeSync(PictureData as String) as WindowsOCRResultMBS 336

10.1.15 RecognizeSync(PictureData as MemoryBlock) as WindowsOCRResultMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image data and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
We run loops to wait and yield time to threads while waiting for the job to finish.
On success, true is returned and result is set.
In case of error, the error parameter is set with a text.

Raises NilObjectException or WindowsOCRExceptionMBS in case of an error.
See also:

- 10.1.13 RecognizeSync(ImageFile as FolderItem) as WindowsOCRResultMBS 335
- 10.1.14 RecognizeSync(Picture as Picture) as WindowsOCRResultMBS 335
- 10.1.16 RecognizeSync(PictureData as String) as WindowsOCRResultMBS 336

10.1.16 RecognizeSync(PictureData as String) as WindowsOCRResultMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Scans the specified image for text in the language specified by the RecognizerLanguage property.
Notes: We will ask Windows to load image from the image data and then run OCR.
Seems to work fine for JPEG and PNG files, but other formats may be supported by Windows, too.
We run loops to wait and yield time to threads while waiting for the job to finish.
On success, true is returned and result is set.
In case of error, the error parameter is set with a text.

Raises NilObjectException or WindowsOCRExceptionMBS in case of an error.
See also:

- 10.1.13 RecognizeSync(ImageFile as FolderItem) as WindowsOCRResultMBS 335
- 10.1.14 RecognizeSync(Picture as Picture) as WindowsOCRResultMBS 335
- 10.1.15 RecognizeSync(PictureData as MemoryBlock) as WindowsOCRResultMBS 336

10.1.17 Properties

10.1.18 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

10.1.19 MaxImageDimension as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the maximum image pixel dimensions supported by the OCR engine.
Example:

```
MessageBox Recognizer.MaxImageDimension.ToString
```

Notes: The maximum image pixel dimensions supported by the OCR engine.
(Read only property)

10.1.20 RecognizerLanguage as WindowsOCRLanguageMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the language being used for text recognition.
Example:

```
Dim Recognizer As New WindowsOCREngine

MessageBox Recognizer.RecognizerLanguage.DisplayName
```

Notes: (Read only property)

10.1.21 Events

10.1.22 RecognizeCompleted(ErrorMessage as String, ErrorCode as Integer, Result as WindowsOCRResultMBS)

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: The event called when the recognize process completes.
Notes: ErrorMessage: The error we report on what went wrong.
ErrorCode: The Windows error code, zero if successful.
Result: The result of the OCR that was initiated by the OcrEngine object.

10.1.23 Stopped(Error as Integer)

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: Called by the engine in case it had to stop.
Notes: Provides Windows error code for the reason.

10.2 class WindowsOCRExceptionMBS

10.2.1 class WindowsOCRExceptionMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The class for an exception in the OCR classes.
Notes: Subclass of the RuntimeException class.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr1

10.3 class WindowsOCRLanguageMBS

10.3.1 class WindowsOCRLanguageMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: A class that provides information related to BCP-47 language tags such as the language name and the script.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr1

Xojo Developer Magazine

- 21.3, page 48: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes

10.3.2 Methods

10.3.3 Constructor(languageTag as String)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Creates a Language object.
Notes: Pass a BCP-47 language tag.

10.3.4 Destructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

10.3.5 Properties

10.3.6 CurrentInputMethodLanguageTag as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the BCP-47 language tag for the currently enabled keyboard layout or Input Method Editor (IME).

Notes: This property returns a value for the currently active input method on the thread with keyboard input focus. Calling this on a background thread may not return the expected results.
(Read only property)

10.3.7 DisplayName as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a localized string that is suitable for display to the user for identifying the language.
Notes: (Read only property)

10.3.8 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

10.3.9 LanguageTag as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the normalized BCP-47 language tag for this language.
Notes: e.g. de-DE for Germany
(Read only property)

10.3.10 NativeName as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the name of the language in the language itself.
Notes: (Read only property)

10.3.11 Script as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the four-letter ISO 15924 script code of the language.
Notes: (Read only property)

10.4 class WindowsOCRLineMBS

10.4.1 class WindowsOCRLineMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a single line of text recognized by the OCR engine and returned as part of the WindowsOCRResultMBS.
Notes: When you call the RecognizeAsync method of the OcrEngine class, the method returns an WindowsOCRResultMBS object. The WindowsOCRResultMBS contains a collection of WindowsOCRLineMBS objects, which you access through the Lines property of the WindowsOCRResultMBS. Each WindowsOCRLineMBS object contains a collection of WindowsOCRWordMBS objects, which you access through the Words property of each WindowsOCRLineMBS.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr1

Xojo Developer Magazine

- 21.3, page 50: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes

10.4.2 Methods

10.4.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

10.4.4 Destructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

10.4.5 Words as WindowsOCRWordMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the collection of WindowsOCRWordMBS objects that represents the words detected in the current line of text by the RecognizeAsync method.

10.4.6 Properties

10.4.7 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

10.4.8 Text as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the text of the recognized line.
Notes: (Read only property)

10.5 class WindowsOCRResultMBS

10.5.1 class WindowsOCRResultMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Contains the results of Optical Character Recognition (OCR).
Notes: When you call the RecognizeAsync method of the OcrEngine class, the method returns an WindowsOCRResultMBS object. The WindowsOCRResultMBS contains a collection of WindowsOCRLineMBS objects, which you access through the Lines property of the WindowsOCRResultMBS. Each WindowsOCRLineMBS object contains a collection of WindowsOCRWordMBS objects, which you access through the Words property of each WindowsOCRLineMBS.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr1

Xojo Developer Magazine

- 21.3, page 52: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes
- 21.3, page 50: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes

10.5.2 Methods

10.5.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

10.5.4 Destructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

10.5.5 Lines as WindowsOCRLineMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the collection of WindowsOCRLineMBS objects that represents the lines of text detected in the image by the RecognizeAsync method.
Notes: When you call the RecognizeAsync method of the OcrEngine class, the method returns an WindowsOCRResultMBS object. The WindowsOCRResultMBS contains a collection of WindowsOCRLineMBS objects, which you access through the Lines property of the WindowsOCRResultMBS. Each WindowsOCRLineMBS object contains a collection of WindowsOCRWordMBS objects, which you access through the Words property of each WindowsOCRLineMBS.

10.5.6 Properties

10.5.7 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

10.5.8 Text as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the recognized text.
Notes: (Read only property)

10.5.9 TextAngle as Double

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the clockwise rotation of the recognized text, in degrees, around the center of the image.
Notes: The clockwise rotation of the recognized text, in degrees, around the center of the image. If the angle of the text can't be detected, the value of this property is null. If the image contains text at different angles, only part of the text will be recognized correctly.

Use the TextAngle property to overlay recognition results correctly on the original image. If the value of the TextAngle property is not null or 0 (zero), then to overlay the recognized text correctly on the original image, you either have to rotate the original image by the detected angle in a counter-clockwise direction, or rotate the recognized text by the detected angle in a clockwise direction.
(Read only property)

10.6 class WindowsOCRWordMBS

10.6.1 class WindowsOCRWordMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a single word in a line of text recognized by the OCR engine and returned as part of the WindowsOCRLineMBS.
Notes: When you call the RecognizeAsync method of the OcrEngine class, the method returns an WindowsOCRResultMBS object. The WindowsOCRResultMBS contains a collection of WindowsOCRLineMBS objects, which you access through the Lines property of the WindowsOCRResultMBS. Each WindowsOCRLineMBS object contains a collection of WindowsOCRWordMBS objects, which you access through the Words property of each WindowsOCRLineMBS.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- Windows OCR for Xojo
- MBS Xojo Plugins, version 23.1pr1

Xojo Developer Magazine

- 21.3, page 50: Windows OCR, Working with Windows' built-in OCR library by Stefanie Juchmes

10.6.2 Methods

10.6.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

10.6.4 Destructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

10.6.5 Properties

10.6.6 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

10.6.7 Height as Single

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the size in pixels of the recognized word.
Notes: (Read only property)

10.6.8 Text as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the text of the recognized word.
Notes: (Read only property)

10.6.9 Width as Single

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the size in pixels of the recognized word.
Notes: (Read only property)

10.6.10 X as Single

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the position in pixels of the recognized word from the top left corner of image when the value of TextAngle property is 0 (zero).
Notes: (Read only property)

10.6.11 Y as Single

Plugin Version: 23.1, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the position in pixels of the recognized word from the top left corner of image when the value of TextAngle property is 0 (zero).
Notes: (Read only property)

Chapter 11

Windows PDF

11.1 class WindowsPDFDocumentMBS

11.1.1 class WindowsPDFDocumentMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a Portable Document Format (PDF) document.
Notes: Methods of this class return an STG_E_READFAULT error if there is a problem in reading the Portable Document Format (PDF) document.
Blog Entries

- MonkeyBread Software Releases the MBS Xojo Plugins in version 23.3
- MBS Xojo Plugins, version 23.3pr1
- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, pages 72 to 73: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes
- 21.5, page 10: News

11.1.2 Methods

11.1.3 Constructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 11.1.4 Constructor(other as WindowsPDFDocumentMBS) 350

11.1.4 Constructor(other as WindowsPDFDocumentMBS)

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
See also:

- 11.1.3 Constructor 349

11.1.5 ConvertImage(ImageData as String) as String

Plugin Version: 23.3, Platform: Windows, Targets: Desktop, Console & Web.

Function: Converts a picture to PNG.
Example:

```
// read in a HEIC image
dim f as FolderItem = SpecialFolder.Desktop.Child("IMG_4609.HEIC")
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// convert to PNG
dim p as string = WindowsPDFDocumentMBS.ConvertImage(s)

// and write out as PNG file
dim o as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim c as BinaryStream = BinaryStream.Create(o, true)
c.Write p
c.close

o.Launch
```

Notes: This is a little utility function to use Windows' built-in image encoders and decoders to convert various image formats like HEIF/HEIC to a PNG image.
Returns new image as string with bytes of PNG image.

11.1.6 Destructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

11.1.7 LoadFromData(data as MemoryBlock, Password as String = "") as WindowsPDFDocumentMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from data in Memoryblock synchronously.
Notes: Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method raises an exception reporting an ERROR_WRONG_PASSWORD (1323) error if the wrong password is specified.
See also:

- 11.1.8 LoadFromData(data as String, Password as String = "") as WindowsPDFDocumentMBS 351

11.1.8 LoadFromData(data as String, Password as String = "") as WindowsPDFDocumentMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from data in string synchronously.
Notes: Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method raises an exception reporting an ERROR_WRONG_PASSWORD (1323) error if the wrong password is specified.
See also:

- 11.1.7 LoadFromData(data as MemoryBlock, Password as String = "") as WindowsPDFDocumentMBS 351

11.1.9 LoadFromDataAsync(data as MemoryBlock, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "")

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from data in MemoryBlock asynchronously.
Notes: Calls the given delegate later.

Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method reports an ERROR_WRONG_PASSWORD (1323) error via delegate if the wrong password is specified.
See also:

- 11.1.10 LoadFromDataAsync(data as String, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "") 352

11.1.10 LoadFromDataAsync(data as String, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "")

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from data in string asynchronously.
Notes: Calls the given delegate later.

Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method reports an ERROR_WRONG_PASSWORD (1323) error via delegate if the wrong password is specified.
See also:

- 11.1.9 LoadFromDataAsync(data as MemoryBlock, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "") 351

11.1.11 LoadFromFile(File as FolderItem, Password as String = "") as WindowsPDFDocumentMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from folderitem synchronously.
Notes: Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method raises an exception reporting an ERROR_WRONG_PASSWORD (1323) error if the wrong password is specified.

11.1.12 LoadFromFileAsync(File as FolderItem, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "")

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from folderitem asynchronously.
Notes: Calls the given delegate later.

Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method reports an ERROR_WRONG_PASSWORD (1323) error via delegate if the wrong password is specified.

11.1.13 LoadFromPath(Path as String, Password as String = "") as WindowsPDFDocumentMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from path synchronously.
Notes: Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method raises an exception reporting an ERROR_WRONG_PASSWORD (1323) error if the wrong password is specified.

11.1.14 LoadFromPathAsync(Path as String, Handler as WindowsPDFDocumentLoadedMBS, Password as String = "")

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Loads a PDF document from path asynchronously.
Notes: Calls the given delegate later.

Password: The password to open the Portable Document Format (PDF) document, if it requires one.

If the Portable Document Format (PDF) document does not require a password, this method ignores it.

This method reports an ERROR_WRONG_PASSWORD (1323) error via delegate if the wrong password is specified.

11.1.15 Page(Index as Integer) as WindowsPDFPageMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets a page from a Portable Document Format (PDF) document.
Notes: The location of the Portable Document Format (PDF) page relative to its parent document. Starts at zero.

11.1.16 Properties

11.1.17 Handle as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

11.1.18 IsPasswordProtected as Boolean

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets whether the Portable Document Format (PDF) document is password-protected.
Notes: True if the Portable Document Format (PDF) document is password-protected; otherwise, false. (Read only property)

11.1.19 PageCount as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the number of pages in the Portable Document Format (PDF) document.
Notes: (Read only property)

11.1.20 Delegates

11.1.21 WindowsPDFDocumentLoadedMBS(ErrorMessage as String, ErrorCode as Integer, document as WindowsPDFDocumentMBS)

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate called when loading finished.

11.2 class WindowsPDFExceptionMBS

11.2.1 class WindowsPDFExceptionMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop only.

Function: The class for exceptions in PDF engine.
Notes: Subclass of the RuntimeException class.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, page 72: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.3 class WindowsPDFPageDimensionsMBS

11.3.1 class WindowsPDFPageDimensionsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents the dimensions of a single page in a Portable Document Format (PDF) document.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, pages 72 to 73: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.3.2 Methods

11.3.3 Constructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.

11.3.4 Destructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

11.3.5 Properties

11.3.6 ArtBox as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries art box.
Notes: Gets the size of a rectangle that contains the Portable Document Format (PDF) page's contents, including any meaningful surrounding white space, as intended by the Portable Document Format (PDF)

page's creator.
(Read only property)

11.3.7 BleedBox as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries bleed box.
Notes: Gets the size of a rectangle that specifies the clipped region of a Portable Document Format (PDF) page's contents when it is displayed.
(Read only property)

11.3.8 CropBox as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries crop box.
Notes: Gets the size of a rectangle that specifies the cropped region of a Portable Document Format (PDF) page's contents when it is displayed.
(Read only property)

11.3.9 Handle as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

11.3.10 MediaBox as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries media box.
Notes: Gets the size of a rectangle that defines the boundaries of the area that the Portable Document Format (PDF) page will be displayed or printed to.
(Read only property)

11.3.11 TrimBox as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Queries trim box.
Notes: Gets the size of a rectangle that specifies the intended dimensions of the Portable Document Format (PDF) page after it has been trimmed.
(Read only property)

11.4 class WindowsPDFPageMBS

11.4.1 class WindowsPDFPageMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents a single page in a Portable Document Format (PDF) document.
Blog Entries

- News from the MBS Xojo Plugins Version 24.0
- MonkeyBread Software Releases the MBS Xojo Plugins in version 24.0
- MBS Xojo Plugins, version 23.6pr4
- MBS Xojo Plugins, version 23.3pr2
- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, pages 72 to 73: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.4.2 Methods

11.4.3 Constructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The private constructor.
See also:

- 11.4.4 Constructor(other as WindowsPDFPageMBS) 360

11.4.4 Constructor(other as WindowsPDFPageMBS)

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The copy constructor.
See also:

- 11.4.3 Constructor 360

11.4.5 Destructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

11.4.6 RenderToMemory(Handler as RenderToMemoryFinishedMBS, Options as WindowsPDFPageRenderOptionsMBS = nil)

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Requests asynchronous rendering of the page.
Notes: Calls the handler delegate later with results (or error code).
Produces a MemoryBlock with image data, which you can pass to Picture.FromData to get as picture.

Asynchronous mode will perform the work on a different thread in the background.
See also:

- 11.4.7 RenderToMemory(Options as WindowsPDFPageRenderOptionsMBS = nil) as MemoryBlock 361

11.4.7 RenderToMemory(Options as WindowsPDFPageRenderOptionsMBS = nil) as MemoryBlock

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Outputs a stream of data, which represents a Portable Document Format (PDF) page's contents as image.
Notes: Takes a set of display settings, applies them to the output of a Portable Document Format (PDF) page's contents, and creates a stream with the customized, rendered output as an synchronous action. This asynchronous action can be used to create a customized display image of the Portable Document Format (PDF) page.

Please call RenderToStream if you need image as string, call RenderToMemory if you need a MemoryBlock and call RenderToPicture if you need a picture.
See also:

- 11.4.6 RenderToMemory(Handler as RenderToMemoryFinishedMBS, Options as WindowsPDFPageRenderOptionsMBS = nil) 361

11.4.8 RenderToPicture(Options as WindowsPDFPageRenderOptionsMBS = nil) as Picture

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Outputs a stream of data, which represents a Portable Document Format (PDF) page's contents as image.
Example:

```
Dim page As WindowsPDFPageMBS = List.RowTagAt(index)
Dim options As New WindowsPDFPageRenderOptionsMBS

if out.Width >out.Height then
options.DestinationWidth = out.Width * 2
else
options.DestinationHeight = out.Height * 2
end if

options.setBitmapEncoderJPEG

currentimage = page.RenderToPicture(options)
out.Refresh // refresh canvas to show the picture
```

Notes: Takes a set of display settings, applies them to the output of a Portable Document Format (PDF) page's contents, and creates a stream with the customized, rendered output as an synchronous action. Provides the resulting stream as picture for Xojo.

Please call RenderToStream if you need image as string, call RenderToMemory if you need a MemoryBlock and call RenderToPicture if you need a picture.

11.4.9 RenderToStream(Handler as RenderToStreamFinishedMBS, Options as WindowsPDFPageRenderOptionsMBS = nil)

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: Requests asynchronous rendering of the page.
Example:

```
Dim page As WindowsPDFPageMBS // current page
page.RenderToStream AddressOf RenderToStreamFinished
```

Notes: Calls the handler delegate later with results (or error code).
Produces a string with the image data.

Asynchronous mode will perform the work on a different thread in the background.

See also:

- 11.4.10 RenderToStream(Options as WindowsPDFPageRenderOptionsMBS = nil) as String 363

11.4.10 RenderToStream(Options as WindowsPDFPageRenderOptionsMBS = nil) as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Outputs a stream of data, which represents a Portable Document Format (PDF) page's contents as image.
Example:

```
Dim page As WindowsPDFPageMBS // your page
Dim options As New WindowsPDFPageRenderOptionsMBS

if out.Width >out.Height then
options.DestinationWidth = out.Width * 2
else
options.DestinationHeight = out.Height * 2
end if

options.setBitmapEncoderJPEG

dim data as string = page.RenderToStream(options)
if data.Bytes >0 then
currentimage = Picture.FromData(data)
out.Refresh // refresh canvas to show the picture
end if
```

Notes: Takes a set of display settings, applies them to the output of a Portable Document Format (PDF) page's contents, and creates a stream with the customized, rendered output as an synchronous action. This asynchronous action can be used to create a customized display image of the Portable Document Format (PDF) page.

Please call RenderToStream if you need image as string, call RenderToMemory if you need a MemoryBlock and call RenderToPicture if you need a picture.
See also:

- 11.4.9 RenderToStream(Handler as RenderToStreamFinishedMBS, Options as WindowsPDFPageRenderOptionsMBS = nil) 362

11.4.11 Properties

11.4.12 Dimensions as WindowsPDFPageDimensionsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the group of dimension properties for a single page in a Portable Document Format (PDF) document.
Notes: (Read only property)

11.4.13 Handle as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

11.4.14 Index as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the relative position of the Portable Document Format (PDF) page within its parent Portable Document Format (PDF) document.
Notes: Return the position of the Portable Document Format (PDF) page relative to its parent Portable Document Format (PDF) document.

The first page of a Portable Document Format (PDF) document is index 0 (zero).
(Read only property)

11.4.15 PreferredZoom as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Portable Document Format (PDF) page's preferred magnification factor.
Notes: (Read only property)

11.4.16 Rotation as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the constant that the Portable Document Format (PDF) page will be rotated when it's displayed or printed.
Notes: See RotationRotate* constants.
Degrees are expressed relative to a clockwise rotation. Degrees are expressed in multiples of 90.
(Read only property)

11.4.17 RotationAngle as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the number of degrees that the Portable Document Format (PDF) page will be rotated when it's displayed or printed.
Notes: Returns angle from 0 to 360¬∞.
(Read only property)

11.4.18 Size as WindowsPDFSizeMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets the Portable Document Format (PDF) page's size based on its related CropBox, MediaBox, and Rotation property values.
Notes: (Read only property)

11.4.19 Constants

Rotations

Constant	Value	Description
RotationNormal	0	No rotation.
RotationRotate180	2	A 180-degree rotation.
RotationRotate270	3	A 270-degree rotation.
RotationRotate90	1	A 90-degree rotation.

11.4.20 Delegates

11.4.21 RenderToMemoryFinishedMBS(ErrorMessage as String, ErrorCode as Integer, Data as MemoryBlock)

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate called when rendering of a page finished.

11.4.22 RenderToStreamFinishedMBS(ErrorMessage as String, ErrorCode as Integer, Data as String)

Plugin Version: 24.0, Platform: Windows, Targets: Desktop, Console & Web.

Function: The delegate called when rendering of a page finished.

11.5 class WindowsPDFPageRenderOptionsMBS

11.5.1 class WindowsPDFPageRenderOptionsMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Represents display settings for a single page of a Portable Document Format (PDF) document, such as the page's background color and its encoding type.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, page 74: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes
- 21.5, page 72: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.5.2 Methods

11.5.3 Constructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The constructor.
Notes: Creates and initializes a new instance of display settings for a single page of a Portable Document Format (PDF) document.

11.5.4 Destructor

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The destructor.

11.5.5 setBitmapEncoderBMP

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Sets encoding type to BMP.

11.5.6 setBitmapEncoderJPEG

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Sets encoding type to JPEG.

11.5.7 setBitmapEncoderPNG

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Sets encoding type to PNG.

11.5.8 setBitmapEncoderTIFF

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Sets encoding type to TIFF.

11.5.9 Properties

11.5.10 BackgroundColor as Color

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the Portable Document Format (PDF) page's background color.
Notes: The default background color is White.
(Read and Write property)

11.5.11 BitmapEncoderId as String

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the Portable Document Format (PDF) page's encoding type to be used while the page is being converted to a bitmap.
Notes: (Read and Write property)

11.5.12 DestinationHeight as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the final size of the rendering of the Portable Document Format (PDF) page in device-independent pixels (DIPs).
Notes: The value for DestinationHeight is the final size of the rendered page. If DestinationHeight is not specified, the page's aspect ratio is maintained relative to the destination width.
(Read and Write property)

11.5.13 DestinationWidth as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets the final size of the rendering of the Portable Document Format (PDF) page in device-independent pixels (DIPs).
Notes: The value for DestinationWidth is the final size of the rendered page. If DestinationWidth is not specified, the page's aspect ratio is maintained relative to the destination height.
(Read and Write property)

11.5.14 Handle as Integer

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The internal object reference.
Notes: (Read only property)

11.5.15 IsIgnoringHighContrast as Boolean

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets whether the Portable Document Format (PDF) page uses the system's high contrast display setting.
Notes: (Read and Write property)

11.5.16 SourceRect as WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Gets or sets a portion of the Portable Document Format (PDF) page to be displayed.
Notes: (Read and Write property)

11.6 class WindowsPDFRectMBS

11.6.1 class WindowsPDFRectMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for a rectangle.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, pages 72 to 73: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.6.2 Properties

11.6.3 Height as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Height of rectangle.
Notes: (Read and Write property)

11.6.4 Width as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Width of rectangle.
Notes: (Read and Write property)

11.6.5 X as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The x origin position.
Notes: (Read and Write property)

11.6.6 Y as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The y origin position.
Notes: (Read and Write property)

11.7 class WindowsPDFSizeMBS

11.7.1 class WindowsPDFSizeMBS

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: The class for a size.
Blog Entries

- News from the MBS Xojo Plugins Version 23.2
- Windows PDF Classes

Xojo Developer Magazine

- 21.5, pages 72 to 73: Windows PDF, New MBS classes let you work with PDFS on Windows. by Stefanie Juchmes

11.7.2 Properties

11.7.3 Height as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Height of rectangle.
Notes: (Read and Write property)

11.7.4 Width as Single

Plugin Version: 23.2, Platform: Windows, Targets: Desktop, Console & Web.

Function: Width of rectangle.
Notes: (Read and Write property)

Chapter 12

Windows Photos

12.1 class WinPhotoAcquireDeviceSelectionDialogMBS

12.1.1 class WinPhotoAcquireDeviceSelectionDialogMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Provides a dialog box for selecting the device to acquire images from.
Blog Entries

- News from the MBS Xojo Plugins Version 20.3
- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.3
- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.1.2 Methods

12.1.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.

12.1.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.1.5 ShowModal(Window as DesktopWindow, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Displays a device selection dialog box.
Notes: The function returns when the user selects a device using the modal dialog box.

Window: The parent window.
DeviceFlags: Integer value containing a combination of device flags that indicate which type of devices to display. The device flags may be a combination of any of the DeviceFlags constants.

DeviceId: A string containing the ID of the selected device.
DeviceType: The type of the selected device.

Returns true if default button was clicked and a device selected.
See also:

- 12.1.6 ShowModal(Window as Window, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 374
- 12.1.7 ShowModal(WindowHandle as Integer, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 375

12.1.6 ShowModal(Window as Window, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Displays a device selection dialog box.
Notes: The function returns when the user selects a device using the modal dialog box.

Window: The parent window.
DeviceFlags: Integer value containing a combination of device flags that indicate which type of devices to display. The device flags may be a combination of any of the DeviceFlags constants.

DeviceId: A string containing the ID of the selected device.
DeviceType: The type of the selected device.

Returns true if default button was clicked and a device selected.
See also:

- 12.1.5 ShowModal(Window as DesktopWindow, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 374

- 12.1.7 ShowModal(WindowHandle as Integer, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 375

12.1.7 ShowModal(WindowHandle as Integer, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Displays a device selection dialog box.
Notes: The function returns when the user selects a device using the modal dialog box.

WindowHandle: Handle to a parent window.
DeviceFlags: Integer value containing a combination of device flags that indicate which type of devices to display. The device flags may be a combination of any of the DeviceFlags constants.

DeviceId: A string containing the ID of the selected device.
DeviceType: The type of the selected device.

Returns true if default button was clicked and a device selected.
See also:

- 12.1.5 ShowModal(Window as DesktopWindow, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 374

- 12.1.6 ShowModal(Window as Window, DeviceFlags as Integer, byref deviceID as String, byref DeviceType as Integer) as boolean 374

12.1.8 Properties

12.1.9 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.1.10 SubmitButtonText as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The text displayed in the dialog box that prompts the user to select a device.
Notes: (Read and Write property)

12.1.11 Title as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The title of the device selection dialog box.
Notes: (Read and Write property)

12.1.12 Constants

Device Flags

Constant	Value	Description
DeviceFlagAllDevices	&hFFFF	Show all devices.
DeviceFlagCPLMode	&h10000	Show CPL devices.
DeviceFlagDVDevices	64	Show digital video camera devices.
DeviceFlagFSDevices	32	Show removable storage devices, such as CD drives or card readers.
DeviceFlagShowOffline	&h20000	Show devices that are offline. Not supported by all device types.
DeviceFlagSTIDevcies	8	Show devices of type Still Image Architecture (STI).
DeviceFlagTWAINDevices	16	Show TWAIN devices.
DeviceFlagWIACameras	2	Show cameras of type Windows Image Acquisition (WIA).
DeviceFlagWIAScanners	4	Show scanners of type Windows Image Acquisition (WIA).
DeviceFlagWPDDevices	1	Show devices of type Windows Portable Devices (WPD).

Device Types

Constant	Value	Description
DeviceTypeDV	6	DV device.
DeviceTypeFS	5	Specifies that the selected device is a removable drive in the file system.
DeviceTypeSTI	3	Specifies that the type of the selected device is Still Image Architecture (STI).
DeviceTypeTWAIN	4	TWAIN device
DeviceTypeUnknown	0	pecifies that the type of the selected device is unknown.
DeviceTypeWIA	2	Specifies that the type of the selected device is Windows Image Acquisition (WIA).
DeviceTypeWPD	1	Specifies that the type of the selected device is Windows Portable Devices (WPD).

12.2 class WinPhotoAcquireItemMBS

12.2.1 class WinPhotoAcquireItemMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The WinPhotoAcquireItemMBS interface provides methods for working with items as they are acquired from a device.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.2.2 Methods

12.2.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

12.2.4 Data as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Reads the data from the file and returns it.

12.2.5 Delete

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Delete method deletes an item.

12.2.6 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.2.7 PropertyKeyCameraSequenceNumber as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The camera sequence number.

12.2.8 PropertyKeyDuplicateDetectionID as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The duplicate detection ID.

12.2.9 PropertyKeyFinalFilename as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The final file name.

12.2.10 PropertyKeyGroupTag as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The group tag.

12.2.11 PropertyKeyIntermediateFile as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The intermediate path name.

12.2.12 PropertyKeyOriginalFilename as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The original path name.

12.2.13 PropertyKeyRelativePathname as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The relative path name.

12.2.14 PropertyKeySkipImport as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: Whether to skip import.

12.2.15 PropertyKeyTransferResult as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: One of the property keys.
Notes: The transfer result.

12.2.16 SubItem(Index as Integer) as WinPhotoAcquireItemMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves a subitem of an item, given the index of the subitem.
Notes: Index: Integer containing the index of the item. Range from 0 to SubItemCount-1.

12.2.17 Thumbnail(width as Integer, Height as Integer) as Picture

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the thumbnail provided for an item.
Notes: Width and height specify the size of the thumbnail.

12.2.18 Properties

12.2.19 CanDelete as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The CanDelete method indicates whether an item may be deleted.
Notes: Indicates that the item can be deleted.
(Read only property)

12.2.20 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.2.21 ItemName as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the file name for an item.
Notes: The file name consists of the display name and the extension, even if the Hide extensions for known file types setting is checked in the Windows Folder Options dialog box.
(Read only property)

12.2.22 SubItemCount as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the number of subitems contained in an item.
Notes: (Read only property)

12.2.23 PropertyValue(key as string) as Variant

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Get or set a property for an item.
Notes: key: Specifies a key for the property to set.

The value is converted to/from variant.
(Read and Write computed property)

12.3 class WinPhotoAcquireMBS

12.3.1 class WinPhotoAcquireMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: This class provides methods for acquiring photos from a device.
Blog Entries

- News from the MBS Xojo Plugins Version 20.3
- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.3
- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.3.2 Methods

12.3.3 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as DesktopWindow, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: The Acquire method acquires photos from a device.
Notes: PhotoAcquireSource: Pointer to an WinPhotoAcquireSourceMBS object representing the device from which to acquire photos. Initialize this object by calling CreatePhotoSource.
ShowProgress: Flag that, when set to true, indicates that a progress dialog will be shown.
Window: The parent window.
ApplicationName: string containing the application name.
PhotoAcquireProgresCallback: Pointer to an optional WinPhotoAcquireProgressCallBackMBS object. Can be nil.

To initialize the PhotoAcquireSource parameter passed to Acquire, CreatePhotoSource should be called prior to calling Acquire.
PhotoAcquireProgresCallback provides callback methods that allow you to apply further filtering or control as items are acquired.
To verify that there are items in the device before acquisition, or to selectively acquire items from the device, call InitializeItemList to enumerate the items before calling Acquire.
See also:

- 12.3.4 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as Window, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 383

- 12.3.5 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindowHandle as Integer, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 383

12.3.4 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as Window, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Acquire method acquires photos from a device.
Notes: PhotoAcquireSource: Pointer to an WinPhotoAcquireSourceMBS object representing the device from which to acquire photos. Initialize this object by calling CreatePhotoSource.
ShowProgress: Flag that, when set to true, indicates that a progress dialog will be shown.
Window: The parent window.
ApplicationName: string containing the application name.
PhotoAcquireProgresCallback: Pointer to an optional WinPhotoAcquireProgressCallBackMBS object. Can be nil.

To initialize the PhotoAcquireSource parameter passed to Acquire, CreatePhotoSource should be called prior to calling Acquire.
PhotoAcquireProgresCallback provides callback methods that allow you to apply further filtering or control as items are acquired.
To verify that there are items in the device before acquisition, or to selectively acquire items from the device, call InitializeItemList to enumerate the items before calling Acquire.
See also:

- 12.3.3 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as DesktopWindow, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 382
- 12.3.5 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindowHandle as Integer, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 383

12.3.5 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindowHandle as Integer, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Acquire method acquires photos from a device.
Notes: PhotoAcquireSource: Pointer to an WinPhotoAcquireSourceMBS object representing the device from which to acquire photos. Initialize this object by calling CreatePhotoSource.
ShowProgress: Flag that, when set to true, indicates that a progress dialog will be shown.
WindowHandle: The parent window handle.

ApplicationName: string containing the application name.
PhotoAcquireProgresCallback: Pointer to an optional WinPhotoAcquireProgressCallBackMBS object. Can be nil.

To initialize the PhotoAcquireSource parameter passed to Acquire, CreatePhotoSource should be called prior to calling Acquire.
PhotoAcquireProgresCallback provides callback methods that allow you to apply further filtering or control as items are acquired.
To verify that there are items in the device before acquisition, or to selectively acquire items from the device, call InitializeItemList to enumerate the items before calling Acquire.
See also:

- 12.3.3 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as DesktopWindow, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 382
- 12.3.4 Acquire(PhotoAcquireSource as WinPhotoAcquireSourceMBS, ShowProgress as Boolean, ParentWindow as Window, ApplicationName as String, PhotoAcquireProgresCallback as WinPhotoAcquireProgressCallBackMBS) 383

12.3.6 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.

12.3.7 CreatePhotoSource(Device as String) as WinPhotoAcquireSourceMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: CreatePhotoSource method initializes an WinPhotoAcquireSourceMBS object to pass to Acquire method.
Notes: Device: The device name/ID.

Returns the initialized photo source to acquire photos from.

12.3.8 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.3.9 Results as String()

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the paths of all files successfully transferred during the most recent call to Acquire.
Notes: If the file transfer is aborted before any files are transferred, the result is nil.

12.3.10 Properties

12.3.11 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.4 class WinPhotoAcquireOptionsDialogMBS

12.4.1 class WinPhotoAcquireOptionsDialogMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The standard dialog to show for options.
Notes: The WinPhotoAcquireOptionsDialogMBS interface is used to display an options dialog box in which the user can select photo acquisition settings such as file name formats, as well as whether or not to rotate images, to prompt for a tag name, or to erase photos from the camera after importing.
Blog Entries

- News from the MBS Xojo Plugins Version 20.3
- MonkeyBread Software Releases the MBS Xojo Plugins in version 20.3
- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.4.2 Methods

12.4.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.
Notes: Please call Initialize.

12.4.4 Create(Window as DesktopWindow) as Integer

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: The Create method creates and displays a modeless instance of the photo options dialog box, hosted within a parent window.
Notes: This method is for advanced users, which can position the new window via declares.

Window: The parent window.

Returns the handle for the created dialog box.

The Initialize method should be called prior to the Create method.
The parent window provides OK and Cancel buttons to the new dialog box instance.
See also:

- 12.4.5 Create(Window as Window) as Integer 387
- 12.4.6 Create(WindowHandle as Integer) as Integer 387

12.4.5 Create(Window as Window) as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Create method creates and displays a modeless instance of the photo options dialog box, hosted within a parent window.
Notes: This method is for advanced users, which can position the new window via declares.

Window: The parent window.

Returns the handle for the created dialog box.

The Initialize method should be called prior to the Create method.
The parent window provides OK and Cancel buttons to the new dialog box instance.
See also:

- 12.4.4 Create(Window as DesktopWindow) as Integer 386
- 12.4.6 Create(WindowHandle as Integer) as Integer 387

12.4.6 Create(WindowHandle as Integer) as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Create method creates and displays a modeless instance of the photo options dialog box, hosted within a parent window.
Notes: This method is for advanced users, which can position the new window via declares.

WindowHandle: Handle to the parent window.

Returns the handle for the created dialog box.

The Initialize method should be called prior to the Create method.
The parent window provides OK and Cancel buttons to the new dialog box instance.
See also:

- 12.4.4 Create(Window as DesktopWindow) as Integer 386
- 12.4.5 Create(Window as Window) as Integer 387

12.4.7 Destroy

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The Destroy method closes and destroys the modeless dialog box created with the Create method.
Notes: If you destroy the parent window, the child window will automatically be destroyed.

12.4.8 Initialize(RegistryRoot as String = "")

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Initializes the options dialog box and reads any saved options from the registry.
Notes: Initialize must be called prior to calling Create or DoModal. Failure to do so will cause Create or DoModal to fail.
If Initialize is called while the options dialog box is already displayed, an error will be returned.

RegistryRoot: (optional) String containing the registry root of a custom location to read the acquisition settings from. If this parameter is set to "", the default location will be used.

12.4.9 SaveData

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The SaveData method saves acquisition settings from the options dialog box to the registry so that a subsequent instance of the dialog can be initialized with the same settings.

12.4.10 ShowModal(Window as Window) as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The DoModal method creates and displays the options dialog box as a modal dialog box.
Notes: Window: The dialog's parent window.
Returns the code returned when the window is closed.

The modal dialog displayed by DoModal will have OK and Cancel buttons, whereas the OK and Cancel buttons of the modeless dialog displayed by Create must be provided by the parent window.
See also:

- 12.4.11 ShowModal(WindowHandle as Integer) as Integer 389

12.4.11 ShowModal(WindowHandle as Integer) as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The DoModal method creates and displays the options dialog box as a modal dialog box.
Notes: WindowHandle: Handle to the dialog's parent window.
Returns the code returned when the window is closed.

The modal dialog displayed by DoModal will have OK and Cancel buttons, whereas the OK and Cancel buttons of the modeless dialog displayed by Create must be provided by the parent window.
See also:

- 12.4.10 ShowModal(Window as Window) as Integer 388

12.4.12 Properties

12.4.13 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.5 class WinPhotoAcquireProgressCallBackMBS

12.5.1 class WinPhotoAcquireProgressCallBackMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The WinPhotoAcquireProgressCallBackMBS interface may be implemented if you wish to do extra processing at various stages in the acquisition process.
Blog Entries

- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.5.2 Methods

12.5.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.

12.5.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.5.5 Properties

12.5.6 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.5.7 Events

12.5.8 Cancelled(byref Cancelled as Boolean)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The Cancelled method provides extended functionality when a cancellation occurs during an acquisition session.
Notes: The application provides the implementation of the Cancelled method.

Cancelled: a flag that, when set to true, indicates that the operation was canceled.

12.5.9 DirectoryCreated(Directory as String)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The DirectoryCreated method provides extended functionality when a destination directory is created during the acquisition process.
Notes: The application provides the implementation of the DirectoryCreated method.

Directory: containing the directory.

12.5.10 EndDelete(Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndDelete method provides extended functionality when deletion of files from the image source is complete.
Notes: The application provides the implementation of the EndDelete method.

Result: Specifies the result of the delete operation.

12.5.11 EndEnumeration(Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndEnumeration method provides extended functionality when enumeration of files from the image source is complete.
Notes: The application provides the implementation of the EndEnumeration method.
Result: Specifies the result of the enumeration operation.

12.5.12 EndItemDelete(ItemIndex as Integer, Item as WinPhotoAcquireItemMBS, Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndItemDelete method provides extended functionality each time a file is deleted from the image source.
Notes: The application provides the implementation of the EndItemDelete method.

ItemIndex: Integer value containing the item index.
Item: To the deleted WinPhotoAcquireItemMBS object.
Result: Specifies the result of the delete operation.

12.5.13 EndItemTransfer(ItemIndex as Integer, Item as WinPhotoAcquireItemMBS, Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndItemTransfer method provides extended functionality each time a file is transferred from the image source.
Notes: The application provides the implementation of the EndItemTransfer method.

ItemIndex: Integer value containing the item index.
Item: Pointer to a photo acquire item object.
Result: Specifies the result of the transfer operation.

12.5.14 EndSession(Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndSession method provides extended functionality when an acquisition session is completed.
Notes: The application provides the implementation of the EndSession method.

12.5.15 EndTransfer(Result as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The EndTransfer method provides extended functionality when the transfer of all files is complete.
Notes: The application provides the implementation of the EndTransfer method.

Result: Specifies the result of the transfer.

12.5.16 ErrorAdvise(Result as Integer, ErrorMessage as String, MessageType as Integer, byref ErrorAdviseResult as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The ErrorAdvise method provides custom error handling for errors that occur during acquisition.
Notes: The application provides the implementation of the ErrorAdvise method.

Result: Specifies the error that occurred.
ErrorMessage: the error message.
MessageType: What type of message. May be one of the following:

Value	Description
AdviseMessageTypeSkipRetryCancel	Specifies that the error that occurred requires a Skip, Retry, or Cancel response. The ErrorAdviseResult parameter must be set to one of the following: AdviseResultSkip, AdviseResultSkipAll, AdviseResultRetry, or AdviseResultAbort.
AdviseMessageTypeRetryCancel	Specifies that the error that occurred requires a Retry or Cancel response. The ErrorAdviseResult parameter must be set to one of the following: AdviseResultRetry or AdviseResultAbort.
AdviseMessageTypeYesNo	Specifies that the error that occurred requires a Yes or No response. The ErrorAdviseResult parameter must be set to one of the following: AdviseResultYes or AdviseResultNo.
AdviseMessageTypeOK	Specifies that the error that occurred requires an OK response. The ErrorAdviseResult parameter must be set to AdviseResultOK.

ErrorAdviseResult: an integer value containing the error advise result. The result should be one of the acceptable types indicated by the MessageType parameter, and must be one of the following:

Value	Description
AdviseResultYes	Specifies a Yes response. Valid if MessageType is AdviseMessageTypeYesNo.
AdviseResultNo	Specifies a No response. Valid if MessageType is AdviseMessageTypeYesNo.
AdviseResultOK	Specifies an OK response. Valid if MessageType is AdviseMessageTypeOK.
AdviseResultSkip	Specifies a Skip response. Valid if MessageType is AdviseMessageTypeSkipRetryCancel.
AdviseResultSkipAll	Specifies a Skip All response. Valid if MessageType is AdviseMessageTypeSkipRetryCancel.
AdviseResultRetry	Specifies a Retry response. Valid if MessageType is AdviseMessageTypeSkipRetryCancel or AdviseMessageTypeRetryCancel.
AdviseResultAbort	Specifies a Cancel response. Valid if MessageType is AdviseMessageTypeSkipRetryCancel or AdviseMessageTypeRetryCancel.

12.5.17 FoundItem(Item as WinPhotoAcquireItemMBS) as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The FoundItem method provides extended functionality each time an item is found during enumeration of items from the device.
Notes: This method can be used to exclude an item from the list of items to acquire. The application provides the implementation of the FoundItem method.

Return true to exclude the item from the results of the enumeration. This would allow the caller to exclude videos or camera raw files, for instance.

12.5.18 GetDeleteAfterAcquire(byref DeleteAfterAcquire as Boolean)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The GetDeleteAfterAcquire method returns a value indicating whether photos should be deleted after acquisition.
Notes: DeleteAfterAcquire: When set to true, indicates that photos should be deleted after acquisition.

12.5.19 GetUserInput(UserInput as WinUserInputStringMBS, byref Result as Variant, DefaultValue as Variant)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The GetUserInput method overrides the default functionality that displays a message prompting the user for string input during acquisition.
Notes: The application provides the implementation of the GetUserInput method.

Result: Variant representing the descriptive input to be obtained.
DefaultValue: Variant representing the default value of the input being requested.

If this method is implemented, the implementation should copy the value of the DefaultValue argument to the Result parameter.

If the progress dialog box is suppressed in Acquire, this method must be implemented in order to assign a default value to the Result parameter. Normally a value is supplied to Result in the course of prompting the user with the default dialog, but when the dialog is suppressed, the application must copy the value of the DefaultValue argument to the Result parameter.

12.5.20 StartDelete(Source as WinPhotoAcquireSourceMBS)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The StartDelete method provides extended functionality when deletion of items from the device begins.
Notes: The implementation of StartDelete is provided by the application.

Source: the WinPhotoAcquireSourceMBS that items are being deleted from.

12.5.21 StartEnumeration(Source as WinPhotoAcquireSourceMBS)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The StartEnumeration method provides extended functionality when the enumeration of items to acquire begins.
Notes: The application provides the implementation of the StartEnumeration method.

Source: the WinPhotoAcquireSourceMBS object that items are being enumerated from.

12.5.22 StartItemDelete(ItemIndex as Integer, Item as WinPhotoAcquireItemMBS)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The StartItemDelete method provides extended functionality each time the deletion of an individual item from the device begins.
Notes: The application provides the implementation of the StartItemDelete method.

ItemIndex: Integer value containing the item index in the list of items to delete.
Item: The WinPhotoAcquireItemMBS object that is being deleted.

12.5.23 StartItemTransfer(ItemIndex as Integer, Item as WinPhotoAcquireItemMBS)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The StartItemTransfer method provides extended functionality each time the transfer of an item begins.
Notes: The application provides the implementation of the StartItemTransfer method.

ItemIndex: Integer value containing the item index in the list of items to transfer.
Item: the WinPhotoAcquireItemMBS object that is to be transferred.

12.5.24 StartTransfer(Source as WinPhotoAcquireSourceMBS)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The StartTransfer method provides additional processing when transfer of items from the device begins.
Notes: The application provides the implementation of the StartTransfer method.

12.5.25 UpdateDeletePercent(Percent as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The UpdateDeletePercent method provides extended functionality when the percentage of items deleted changes.
Notes: The application provides the implementation of the UpdateDeletePercent method.

Percent: Integer value containing the percentage of items deleted.

12.5.26 UpdateTransferPercent(Overall as Boolean, Percent as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: The UpdateTransferPercent method provides extended functionality when the percentage of items transferred changes.
Notes: The application provides the implementation of the UpdateTransferPercent method.

Overall: Flag that, when set to TRUE, indicates that the value contained in nPercent is a percentage of the overall transfer progress, rather than a percentage of an individual item's progress.
Percent: Integer value containing the percentage of items transferred.

12.5.27 Constants

Advise Message Types

Constant	Value	Description
AdviseMessageTypeOK	3	Specifies that the error that occurred requires an OK response. The Erro viseResult parameter must be set to AdviseResultOK.
AdviseMessageTypeRetryCancel	1	Specifies that the error that occurred requires a Skip, Retry, or Cancel respo The ErrorAdviseResult parameter must be set to one of the following: A eResultSkip, AdviseResultSkipAll, AdviseResultRetry, or AdviseResultAb
AdviseMessageTypeSkipRetryCancel	0	Specifies that the error that occurred requires a Retry or Cancel response. ErrorAdviseResult parameter must be set to one of the following: Advis sultRetry or AdviseResultAbort.
AdviseMessageTypeYesNo	2	Specifies that the error that occurred requires a Yes or No response. The E rAdviseResult parameter must be set to one of the following: AdviseResul or AdviseResultNo.

Advise Results

Constant	Value	Description
AdviseResultAbort	6	Specifies a Cancel response. Valid if MessageType is AdviseMessageType-SkipRetryCancel or AdviseMessageTypeRetryCancel.
AdviseResultNo	1	Specifies a No response. Valid if MessageType is AdviseMessageTypeYesNo.
AdviseResultOK	2	Specifies an OK response. Valid if MessageType is AdviseMessageTypeOK.
AdviseResultRetry	5	Specifies a Retry response. Valid if MessageType is AdviseMessageType-SkipRetryCancel or AdviseMessageTypeRetryCancel.
AdviseResultSkip	3	Specifies a Skip response. Valid if MessageType is AdviseMessageType-SkipRetryCancel.
AdviseResultSkipAll	4	Specifies a Skip All response. Valid if MessageType is AdviseMessageTypeR-etryCancel.
AdviseResultYes	0	Specifies a Yes response. Valid if MessageType is AdviseMessageTypeYesNo.

12.6 class WinPhotoAcquireSettingsMBS

12.6.1 class WinPhotoAcquireSettingsMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The WinPhotoAcquireSettingsMBS interface is used to work with image acquisition settings, such as file name format.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 22.1pr2
- News from the MBS Xojo Plugins Version 20.3
- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.6.2 Methods

12.6.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

12.6.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.6.5 InitializeFromRegistry(RegistryKey as String)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Specifies a registry key from which to initialize settings.

12.6.6 Properties

12.6.7 AcquisitionDateTime as DateTime

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The acquisition time explicitly.
Notes: This property is typically used to force two sessions to show the same acquisition time. If not explicitly set, acquisition time defaults to the current machine time.
(Read and Write property)

12.6.8 AcquisitionTime as Date

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The acquisition time explicitly.
Notes: This property is typically used to force two sessions to show the same acquisition time. If not explicitly set, acquisition time defaults to the current machine time.
(Read and Write property)

12.6.9 Flags as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The photo acquire flags.
Notes: (Read and Write property)

12.6.10 GroupTag as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The group tag for an acquisition session.
Notes: The group tag is stored as a keyword in each file's metadata. It is also used in the file name if the $ (GroupTag) token is present in the format string passed to OutputFileNameTemplate.
(Read and Write property)

12.6.11 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.

Notes: (Read only property)

12.6.12 OutputFilenameTemplate as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Specifies a format string (template) that specifies the format of file names.
Notes: Format strings contain a mix of path literals and tokens. A format string looks like the following:

$ (MyPicturesFolder)\$ (DateAcquired), $ (EventName)\$ (EventName) $ (SequenceNumber).$ (OriginalExtension)

The token format looks like the following, where OptionalPrefix and OptionSuffix are suppressed if the replacement for the TokenIdentifier yields a zero-length string:

$ ([OptionalPrefix] TokenIdentifier:SubToken [OptionalSuffix] | AlternateString)

The caret ("^") is an escape character, so "^$ " would yield "$ " in the final path.
Parentheses and brackets are not allowed as literals within tokens, but can be used outside of tokens. This means you cannot use " [", "] ", "(", or ")" within the OptionalString sub-token unless they are escaped with a caret ("^").
There are a few different classes of tokens, including the following:
SHGetSpecialFolder variables such as the following. These must be the first token, and can only occur once, at most:

- MyPicturesFolder
- MyDocumentsFolder

Session variables such as the following:

- SequenceNumber (The sequence number is used to avoid filename collisions; if it exists, it must be in the file name portion of the path.)
- DateAcquired
- EventName
- UserName
- MachineName

File and metadata variables such as the following:

- DateTaken
- OriginalFilename
- OriginalExtension
- CameraModel
- Width
- Height

Since these tokens are not intended to be visible to users, they will not be localized. For example, $ (DateTaken) will be the same on all versions of Microsoft Windows, regardless of locale or language settings.
As an example, suppose EventName is "Meghan's Birthday" and the naming pattern is as follows:

$ (MyPicturesFolder)\$ (DateAcquired)$ ([,] EventName)\$ (EventName [ ])$ (SequenceNumber).$ (OriginalExtension)
The resulting files would be named as follows:

C:\Documents and Settings\shauniv\My Documents\My Pictures\2003-11-14, Meghan's Birthday\Meghan's Birthday 001.jpg
C:\Documents and Settings\shauniv\My Documents\My Pictures\2003-11-14, Meghan's Birthday\Meghan's Birthday 002.jpg
C:\Documents and Settings\shauniv\My Documents\My Pictures\2003-11-14, Meghan's Birthday\Meghan's Birthday 003.jpg
C:\Documents and Settings\shauniv\My Documents\My Pictures\2003-11-14, Meghan's Birthday\Meghan's Birthday 004.jpg
(Read and Write property)

12.6.13 SequencePaddingWidth as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: A value indicating how wide sequential fields in filenames will be.
Notes: If the value passed to SetSequencePaddingWidth is nonzero and the format string specified in SetOutputFileNameTemplate contains a sequential token, this method sets the width allotted for the sequential token. For example, given the template $ (GroupTag)$ (AcquisitionSequence).$ (OriginalExtension), if padding is set to 0, a file name might appear as

"Image1.jpg"

If padding is set to 3, the file name may appear as

"Image 1.jpg"
(Read and Write property)

12.6.14 SequenceZeroPadding as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Whether zeros or spaces are used to pad sequential file names.
Notes: Flag that, if set to true, indicates that zeros pad sequential file names.
(Read and Write property)

12.6.15 Constants

Flags

Constant	Value	Description
kFlagsAbortOnSettingsUpdate	&h00000800	Abort on settings update.
kFlagsDeleteAfterAcquire	&h00000020	Delete after acquire.
kFlagsDisableAutoRotate	&h00000002	Disable auto rotate.
kFlagsDisableDbIntegration	&h00000010	Disable DB integration.
kFlagsDisableDuplicateDetection	&h00000040	Disable duplicate detection.
kFlagsDisableGroupTagPrompt	&h00000008	Disable group tag prompt.
kFlagsDisableMetadataWrite	&h00000100	Disable metadata write.
kFlagsDisablePlugins	&h00000004	Disable plugins.
kFlagsDisableSettingsLink	&h00000400	Disable settings link.
kFlagsDisableThumbnailProgress	&h00000200	Disable thumbmail progress.
kFlagsEnableThumbnailCaching	&h00000080	Enable thumbnail caching. On by default.
kFlagsImportVideoAsMultipleFiles	&h00001000	Import videos as multiple files.
kFlagsNoGalleryLaunch	&h00000001	Suppresses the explorer window launched after acquisition.

12.7 class WinPhotoAcquireSourceMBS

12.7.1 class WinPhotoAcquireSourceMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: This class is used for acquisition of items from a device.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 22.1pr2
- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.7.2 Methods

12.7.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

12.7.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.7.5 InitializeItemList(ForceEnumeration as Boolean, PhotoAcquireProgress as WinPhotoAcquireProgressCallBackMBS, byref ItemCount as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The InitializeItemList method enumerates transferable items on the device and passes each item to the optional progress callback, if it is supplied.
Notes: ForceEnumeration: Flag that, if set to true, indicates that enumeration will be repeated even if the item list has already been initialized. If set to false, this flag indicates that repeated calls to InitializeItemList after the item list has already been initialized will not enumerate items again.
PhotoAcquireProgress: Optional. Pointer to an WinPhotoAcquireProgressCallBackMBS object for events.

ItemCount: Returns the number of items found.

If Acquire is called without first calling InitializeItemList, initialization of the item list is done implicitly. The first time the item list is initialized—either implicitly through Acquire or explicitly by calling InitializeItemList—each item is enumerated. During enumeration, if an WinPhotoAcquireProgressCallBackMBS object is passed to InitializeItemList, its implementation of StartEnumeration, FoundItem, and EndEnumeration may be used to apply further filtering or control to the list of items to be transferred.

12.7.6 Item(Index as Integer) as WinPhotoAcquireItemMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the WinPhotoAcquireItemMBS object at the given index in the list of items.
Notes: Index: The index from 0 to ItemCount-1.

12.7.7 Properties

12.7.8 DeviceId as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the identifier (ID) of the device.
Notes: (Read only property)

12.7.9 FriendlyName as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the name of the device, formatted for display.
Notes: (Read only property)

12.7.10 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.7.11 ItemCount as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Retrieves the number of items found by the InitializeItemList method.
Notes: (Read only property)

12.7.12 PhotoAcquireSettings as WinPhotoAcquireSettingsMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Obtains an IPhotoAcquireSettings object for working with acquisition settings.
Notes: (Read only property)

12.8 class WinPhotoExceptionMBS

12.8.1 class WinPhotoExceptionMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The class for exceptions in the Windows Photo classes.
Notes: Subclass of the RuntimeException class.
Blog Entries

- MBS Xojo Plugins, version 20.3pr6

12.9 class WinPhotoProgressActionCallbackMBS

12.9.1 class WinPhotoProgressActionCallbackMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The class for an action callback.
Blog Entries

- MBS Xojo Plugins, version 20.3pr6

12.9.2 Methods

12.9.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.

12.9.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.9.5 Properties

12.9.6 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.9.7 Events

12.9.8 DoAction(WindowHandle as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: .

Function: Run the action for the progress action.

12.10 class WinPhotoProgressDialogMBS

12.10.1 class WinPhotoProgressDialogMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Provides the progress dialog box that may be displayed when enumerating or importing images.
Notes: The dialog box is modal and runs in its own thread.
Blog Entries

- Windows Photos Acquire
- MBS Xojo Plugins, version 20.3pr6

12.10.2 Methods

12.10.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The constructor.

12.10.4 Create(ParentWindow as DesktopWindow)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: Creates and displays a progress dialog box that can be shown during image enumeration and acquisition.
Notes: ParentWindow: The parent window.

The dialog box that is created is modal, and runs in its own thread.
To close the dialog, call Destroy.
See also:

- 12.10.5 Create(ParentWindow as Window) 409
- 12.10.6 Create(ParentWindowHandle as Integer) 410

12.10.5 Create(ParentWindow as Window)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Creates and displays a progress dialog box that can be shown during image enumeration and acquisition.

Notes: ParentWindow: The parent window.

The dialog box that is created is modal, and runs in its own thread.
To close the dialog, call Destroy.
See also:

- 12.10.4 Create(ParentWindow as DesktopWindow) 409
- 12.10.6 Create(ParentWindowHandle as Integer) 410

12.10.6 Create(ParentWindowHandle as Integer)

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Creates and displays a progress dialog box that can be shown during image enumeration and acquisition.
Notes: ParentWindowHandle: Handle of the parent window.

The dialog box that is created is modal, and runs in its own thread.
To close the dialog, call Destroy.
See also:

- 12.10.4 Create(ParentWindow as DesktopWindow) 409
- 12.10.5 Create(ParentWindow as Window) 409

12.10.7 Destroy

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Closes and disposes of the progress dialog box shown during image enumeration and acquisition.
Notes: Calling Destroy is the only way to close the progress dialog box. If Destroy is not called, the dialog box will remain open. The dialog box is not automatically closed when the operation in progress completes.

12.10.8 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.10.9 IsCheckboxChecked(Index as Integer = 0) as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The check box in the progress dialog box (typically indicating whether to delete files after transfer) is selected.
Notes: Index: Integer value containing the check box identifier (ID).

12.10.10 Properties

12.10.11 ActionLinkCallback as WinPhotoProgressActionCallbackMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The callback object to receive action callback.
Notes: (Read and Write property)

12.10.12 ActionLinkText as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The link text for the action item.
Notes: (Read and Write property)

12.10.13 Caption as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The caption of the progress dialog box.
Notes: The caption text is displayed above the progress indicator bar in the dialog box.
(Read and Write property)

12.10.14 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.10.15 IsCancelled as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The IsCancelled method indicates whether the operation has been canceled via the progress dialog box.
Notes: Returns true to indicate the action has been canceled.
(Read only property)

12.10.16 PercentComplete as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: A value indicating the completed portion of the current operation.
Notes: Integer value indicating the percentage of the operation that has completed. This value may be between 0 and 100 only.

If you pass ProgressIndeterminate to PercentComplete, the progress bar will not progress from left to right (from 0 to 100%), but will instead animate to indicate that an operation with an indeterminate end is taking place.
(Read and Write property)

12.10.17 Picture as Picture

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The thumbnail image displayed in the progress dialog box.
Notes: A bitmap thumbnail (up to 128 x 128 pixels, although it will be scaled to fit if it is too large).
(Read and Write property)

12.10.18 ProgressText as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The text for the progress bar in the progress dialog box.
Notes: (Read and Write property)

12.10.19 ShowsActionLink as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Whether to show an action link.
Notes: (Read and Write property)

12.10.20 Title as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The title of the progress dialog box.
Notes: (Read and Write property)

12.10.21 WindowHandle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The window handle for the dialog.
Notes: (Read only property)

12.10.22 CheckboxCheck(Index as Integer = 0) as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Whether the checkbox is checked.
Notes: (Read and Write computed property)

12.10.23 CheckboxText(Index as Integer = 0) as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The text for the check box in the progress dialog box indicating whether to delete images after transfer.
Notes: Index: Integer containing the check box identifier (ID).
(Read and Write computed property)

12.10.24 CheckboxTooltip(Index as Integer = 0) as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The tooltip text for the check box in the progress dialog box.
Notes: Index: Integer containing the check box identifier (ID).
(Read and Write computed property)

12.10.25 CheckboxVisible(Index as Integer = 0) as Boolean

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: Whether the checkbox is visible.
Notes: (Read and Write computed property)

12.10.26 Constants

Constants

Constant	Value	Description
ProgressDialogCheckboxIDDefault	0	The ID of the default checkbox.
ProgressIndeterminate	-1	The progress value for indeterminate.

12.11 class WinUserInputStringMBS

12.11.1 class WinUserInputStringMBS

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The object created when asking the user for a string—for example, when obtaining the name of a tag.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- MBS Xojo Plugins, version 20.3pr6

12.11.2 Methods

12.11.3 Constructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

12.11.4 Destructor

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The destructor.

12.11.5 MRUEntry(Index as Integer) as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The entry at the given index in the most recently used list.
Notes: Index from 0 to MRUCount-1.

12.11.6 Properties

12.11.7 Default as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The default string used to initialize an edit control (or equivalent).
Notes: (Read only property)

12.11.8 Handle as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

12.11.9 MaxLength as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The maximum string length the user interface (UI) should allow.
Notes: The maximum string length in characters.
(Read only property)

12.11.10 MRUCount as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The number of items in the list of most recently used items.
Notes: (Read only property)

12.11.11 Prompt as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The title of a prompt if the prompt is a modal dialog box.
Notes: (Read only property)

12.11.12 StringId as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The unlocalized canonical name for the requested string.
Notes: For example, when requesting a tag name, the canonical name might be ”TagName”.
(Read only property)

12.11.13 StringType as Integer

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: A value indicating the type of string to obtain from the user.
Notes: A value indicating the type of string to obtain from the user.

See UserInputDefault and UserInputPathElement constants.
(Read only property)

12.11.14 SubmitButtonText as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The text for the submit button.
Notes: (Read only property)

12.11.15 TooltipText as String

Plugin Version: 20.3, Platform: Windows, Targets: Desktop only.

Function: The tooltip text displayed for a control.
Notes: (Read only property)

12.11.16 Constants

Types

Constant	Value	Description
UserInputDefault	0	Specifies that any string is allowed.
UserInputPathElement	1	Specifies that the string will not accept characters that are illegal in file or directory names (such as * or /).

Chapter 13

Windows Store

13.1 class WindowsStoreAppLicenseMBS

13.1.1 class WindowsStoreAppLicenseMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides license info for the current app, including licenses for products that are offered by the app.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- News from the MBS Xojo Plugins Version 20.4
- Selling Xojo apps on Windows Store

13.1.2 Methods

13.1.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.1.4 Properties

13.1.5 AddOnLicenses as Dictionary

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the collection of licenses for durable add-ons for which the user has entitlements to use.
Notes: This property does not include licenses for consumable add-ons.

Returns a map of key and value pairs, where each key is the Store ID of an add-on SKU from the Microsoft Store catalog and each value is a StoreLicense object that contains license info for the add-on.

This collection contains durable add-on licenses that are currently valid. When a license is expired or no longer valid, it will no longer be available in this collection.
(Read only property)

13.1.6 ExpirationDate as Int64

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the expiration date and time for the app license.
Notes: The expiration date and time for the app license, relative to the system clock.

For usage-limited trials, the expiration date is December 31, 9999. Usage-limited trials are currently available only to some developer accounts in Xbox managed partner programs.
(Read only property)

13.1.7 ExtendedJsonData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets complete license data in JSON format.
Notes: Use the ExtendedJsonData property to access the complete data for the StoreAppLicense object as a JSON-formatted string in your code.
(Read only property)

13.1.8 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.

Notes: (Read only property)

13.1.9 IsActive as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the license is valid and provides the current user an entitlement to use the app.
Notes: (Read only property)

13.1.10 IsTrial as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the license is a trial license.
Notes: (Read only property)

13.1.11 IsTrialOwnedByThisUser as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the current user has an entitlement for the usage-limited trial that is associated with this app license.
Notes: This property is intended to be used by developers who have configured their app as a usage-limited trial in Partner Center. Usage-limited trials are currently available only to some developer accounts in Xbox managed partner programs.
(Read only property)

13.1.12 SkuStoreId as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the Store ID of the licensed app SKU from the Microsoft Store catalog.
Notes: (Read only property)

13.1.13 TrialTimeRemaining as Double

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the remaining time for the usage-limited trial that is associated with this app license.
Notes: This property is intended to be used by developers who have configured their app as a usage-limited trial in Partner Center. Usage-limited trials are currently available only to some developer accounts in Xbox managed partner programs.

Value is in seconds.
(Read only property)

13.1.14 TrialUniqueId as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a unique ID that identifies the combination of the current user and the usage-limited trial that is associated with this app license.
Notes: This property is intended to be used by developers who have configured their app as a usage-limited trial in Partner Center. Usage-limited trials are currently available only to some developer accounts in Xbox managed partner programs.
(Read only property)

13.2 class WindowsStoreContextMBS

13.2.1 class WindowsStoreContextMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The base class for Windows Store APIs.
Example:

```
dim context as New WindowsStoreContextMBS(Window1)
```

Notes: Provides members you can use to access and manage Microsoft Store-related data for the current app. For example, you can use members of this class to get Microsoft Store listing and license info for the current app, purchase the current app or products that are offered by the app, or download and install package updates for the app.

Requires Windows 10 Anniversary Edition (introduced in 10.0.14393.0)

Uses delegates, so only available for Xojo 2013 or newer.

see also
https://docs.microsoft.com/en-us/uwp/api/windows.services.store.storecontext?view=winrt-19041
Blog Entries

- MBS Xojo Plugins, version 23.1pr4
- MBS Xojo Plugins, version 23.1pr3
- MBS Xojo Plugins, version 21.6pr3
- News from the MBS Xojo Plugins Version 20.4
- Selling Xojo apps on Windows Store
- MBS Xojo Plugins, version 20.4pr4

13.2.2 Methods

13.2.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.
See also:

- 13.2.4 Constructor(Parent as DesktopWindow) 424

- 13.2.5 Constructor(Parent as Window) 424

13.2.4 Constructor(Parent as DesktopWindow)

Plugin Version: 22.0, Platform: Windows, Targets: Desktop only.

Function: The constructor.
Notes: Initializes store and sets parent window to use for dialogs.
See also:

- 13.2.3 Constructor 423
- 13.2.5 Constructor(Parent as Window) 424

13.2.5 Constructor(Parent as Window)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The constructor.
Notes: Initializes store and sets parent window to use for dialogs.
See also:

- 13.2.3 Constructor 423
- 13.2.4 Constructor(Parent as DesktopWindow) 424

13.2.6 GetAppLicenseAsync(CompletionHandler as GetAppLicenseCompletedMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets license info for the current app, including licenses for add-ons for the current app.
Example:

```
dim context as New WindowsStoreContextMBS(Window1)
context.GetAppLicenseAsync AddressOf GetAppLicenseCompleted
```

Notes: Asynchronous version, which returns quickly and calls the given delegate later when done.

The StoreAppLicense object returned by this method provides access to licenses for add-ons and other info, such as whether the license is active. If this method is called while the device is offline, it returns the cached value of the current licenses on the device.

13.2.7 GetAppLicenseSync as WindowsStoreAppLicenseMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets license info for the current app, including licenses for add-ons for the current app.
Notes: Synchronous version, which waits for the result.

The StoreAppLicense object returned by this method provides access to licenses for add-ons and other info, such as whether the license is active. If this method is called while the device is offline, it returns the cached value of the current licenses on the device.

13.2.8 GetAssociatedStoreProductsAsync(productKinds() as String, CompletionHandler as GetStoreProductsCompletedMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets Microsoft Store info for the add-ons of the current app for which the user has purchased.
Notes: productKinds: An array of strings that specify the types of add-ons for which you want to retrieve info.

13.2.9 GetStoreProductForCurrentAppAsync(CompletionHandler as GetStoreProductForCurrentAppCompletedMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets Microsoft Store listing info for the current app and provides access to a method that you can use to purchase the app for the current user.
Example:

```
dim context as New WindowsStoreContextMBS(Window1)
context.GetStoreProductForCurrentAppAsync AddressOf GetStoreProductForCurrentAppCompleted
```

13.2.10 GetStoreProductsAsync(productKinds() as String, storeIds() as String, CompletionHandler as GetStoreProductsCompletedMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets Microsoft Store listing info for the specified products that are associated with the current app.
Example:

```
// please change ID for the item to find
```

```
Dim StoreIds() As String = Array("12345", "67890")
Dim ProductKinds() As String = Array("**Application**", "**Game**", "**Consumable**", "**Unmanagedconsumable**", "**Durable**")

context.GetStoreProductsAsync ProductKinds, StoreIds, AddressOf GetStoreProductsAsyncCompleted
```

Notes: productKinds: An array of strings that specify the types of products for which you want to retrieve listing info.
storeIds: An array of the Store ID strings for the products for which you want to retrieve listing info.

13.2.11 GetUserCollectionAsync(productKinds() as String, CompletionHandler as GetStoreProductsCompletedMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets Microsoft Store info for the add-ons of the current app for which the user has purchased.
Notes: productKinds: An array of strings that specify the types of add-ons for which you want to retrieve info.

13.2.12 RequestPurchaseAsync(CompletionHandler as RequestPurchaseCompletedMBS, StoreID as String, PurchaseProperties as WindowsStorePurchasePropertiesMBS = nil)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Requests the purchase for the specified app or add-on and displays the UI that is used to complete the transaction via the Microsoft Store.
Example:

```
dim context as New WindowsStoreContextMBS(Window1)

// please change ID for the item to purchase
Const StoreID = "9NCMFFPJRVHC"

context.RequestPurchaseAsync AddressOf RequestPurchaseCompleted, StoreID
```

Notes: This method provides the option to specify additional details for a specific offer within a large catalog of products that are represented by a single listing in the Microsoft Store, including the product name to display to the user during the purchase.

StoreID: The Store ID of the app or the add-on that you want to purchase for the current user.
PurchaseProperties: The optional purchase properties with display name or additional JSON.

13.2.13 RequestRateAndReviewAppAsync(CompletionHandler as RequestRateAndReviewAppCompletedMBS = nil)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Requests the user to rate and review the app.
Example:

```
dim context as New WindowsStoreContextMBS(Window1)
context.RequestRateAndReviewAppAsync AddressOf RequestRateAndReviewAppCompleted
```

Notes: This method will display the UI for the user to select a Store rating and add an optional Store review for the product.
The delegate will later be called with the result.

13.2.14 Properties

13.2.15 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.2.16 Parent as Variant

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The parent window for dialogs.
Notes: Can reference a Window or DesktopWindow object.
(Read and Write property)

13.2.17 Events

13.2.18 OfflineLicensesChanged

Plugin Version: 23.1, Platform: Windows, Targets: .

Function: Raised when the status of the app's license changes (for example, the trial period has expired or the user has purchased the full version of the app).
Notes: When this event is raised, you can get the latest app license from the Microsoft Store by calling the GetAppLicenseAsync method. The WindowsStoreAppLicenseMBS object returned by this method also contains the latest add-on licenses for the app in the AddOnLicenses property.

13.2.19 Constants

Asynchronous Status

Constant	Value	Description
kAsyncStatusCanceled	2	The operation was canceled.
kAsyncStatusCompleted	1	The operation has completed.
kAsyncStatusError	3	The operation has encountered an error.
kAsyncStatusStarted	0	The operation has started.

13.2.20 Delegates

13.2.21 GetAppLicenseCompletedMBS(ErrorCode as Integer, appLicense as WindowsStoreAppLicenseMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The delegate called when app license data was retrieved.
Notes: ErrorCode: The Windows error code in case of a failure.
Blog Entries

- MBS Xojo Plugins, version 23.1pr3

13.2.22 GetStoreProductForCurrentAppCompletedMBS(ErrorCode as Integer, result as WindowsStoreProductResultMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The delegate called when query is done.
Notes: ErrorCode: The Windows error code in case of a failure.
Blog Entries

- MBS Xojo Plugins, version 23.1pr3

13.2.23 GetStoreProductsCompletedMBS(ErrorCode as Integer, result as WindowsStoreProductQueryResultMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The delegate for receiving results from product query calls.
Notes: ErrorCode: The Windows error code in case of a failure.
Blog Entries

- MBS Xojo Plugins, version 23.1pr3

13.2.24 RequestPurchaseCompletedMBS(ErrorCode as Integer, result as WindowsStorePurchaseResultMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The purchase completed and you can query the status.
Notes: ErrorCode: The Windows error code in case of a failure.
Blog Entries

- MBS Xojo Plugins, version 23.1pr3

13.2.25 RequestRateAndReviewAppCompletedMBS(ErrorCode as Integer, result as WindowsStoreRateAndReviewResultMBS)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The delegate used for RequestRateAndReviewAppAsync method.
Notes: ErrorCode: The Windows error code in case of a failure.
Blog Entries

- MBS Xojo Plugins, version 23.1pr3

13.3 class WindowsStoreExceptionMBS

13.3.1 class WindowsStoreExceptionMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The exception class to report exceptions with Windows Store.
Notes: Subclass of the RuntimeException class.
Blog Entries

- Selling Xojo apps on Windows Store

13.4 class WindowsStoreImageMBS

13.4.1 class WindowsStoreImageMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Represents an image that is associated with a product listing in the Windows Store.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MBS Xojo Plugins, version 23.1pr3

13.4.2 Methods

13.4.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.4.4 Properties

13.4.5 Caption as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the caption for the image.
Notes: (Read only property)

13.4.6 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.4.7 Height as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the height of the image, in pixels.
Notes: (Read only property)

13.4.8 ImagePurposeTag as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the tag for the image.
Notes: (Read only property)

13.4.9 Uri as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the URI of the image.
Notes: (Read only property)

13.4.10 Width as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the width of the image, in pixels.
Notes: (Read only property)

13.5 class WindowsStoreLicenseMBS

13.5.1 class WindowsStoreLicenseMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Provides license info for a durable add-on that is associated with the current app.
Notes: To retrieve StoreLicense objects for the durable add-ons for the current app, use the WindowsStoreAppLicenseMBS.AddOnLicenses property. This property contains only the add-on licenses that are still valid and provide the current user with an entitlement to use the add-on. When an add-on license expires or is longer valid, it will no longer be available in the WindowsStoreAppLicenseMBS.AddOnLicenses collection. This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MBS Xojo Plugins, version 23.1pr3

13.5.2 Methods

13.5.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.5.4 Properties

13.5.5 ExpirationDate as Int64

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the expiration date and time for the add-on license.
Notes: (Read only property)

13.5.6 ExtendedJsonData as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets complete license data in JSON format.
Notes: (Read only property)

13.5.7 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.5.8 InAppOfferToken as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the Store ID of the licensed add-on SKU from the Microsoft Store catalog.
Notes: (Read only property)

13.5.9 IsActive as Boolean

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: This property is reserved for future use, and it is not intended to be used in the current release.
Notes: Currently, it always returns true.
(Read only property)

13.5.10 SkuStoreId as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets in the product ID for the add-on.
Notes: (Read only property)

13.6 class WindowsStorePriceMBS

13.6.1 class WindowsStorePriceMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Contains pricing info for a product listing in the Microsoft Store.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 20.4
- Selling Xojo apps on Windows Store

13.6.2 Methods

13.6.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.6.4 Properties

13.6.5 CurrencyCode as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the ISO 4217 currency code for the market of the current user.
Notes: (Read only property)

13.6.6 FormattedBasePrice as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the base price for the product with the appropriate formatting for the market of the current user.
Notes: (Read only property)

13.6.7 FormattedPrice as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the purchase price for the product with the appropriate formatting for the market of the current user.
Notes: (Read only property)

13.6.8 FormattedRecurrencePrice as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the recurring price for the product with the appropriate formatting for the market of the current user, if recurring billing is enabled for this product.
Notes: (Read only property)

13.6.9 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.6.10 IsOnSale as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the product is on sale.
Notes: (Read only property)

13.6.11 SaleEndDate as Int64

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the end date for the sale period for the product, if the product is on sale.
Notes: (Read only property)

13.7 class WindowsStoreProductMBS

13.7.1 class WindowsStoreProductMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Represents a product that is available in the Microsoft Store.
Notes: Products in the Store are organized in a hierarchy of product, SKU, and availability objects. Products are represented by StoreProduct objects. The SKUs for each product are represented by StoreSku objects, and the availabilities for each SKU are represented by StoreAvailability objects. For more information, see In-app purchases and trials.
To retrieve a StoreProduct object for the current app, use the GetStoreProductForCurrentAppAsync method. To retrieve StoreProduct objects for products that can be purchased from within the current app, use these methods.

- GetAssociatedStoreProductsAsync
- GetAssociatedStoreProductsWithPagingAsync
- GetStoreProductsAsync
- GetUserCollectionAsync
- GetUserCollectionWithPagingAsync

This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- News from the MBS Xojo Plugins Version 20.4
- Selling Xojo apps on Windows Store

13.7.2 Methods

13.7.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.7.4 GetIsAnySkuInstalledAsync(CompletionHandler as GetIsAnySkuInstalledAsyncCompletedMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Indicates whether any SKU of this product is installed on the current device.
Notes: This method is intended to be used for products that have downloadable content (DLC).

Starts an asynchronous operation that, on successful completion, returns true if a SKU of this product is installed on the current device; otherwise, false.

13.7.5 Images as WindowsStoreImageMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the images from the Windows Store listing for the product.
Notes: Returns a collection of WindowsStoreImageMBS objects that represent the images from the Windows Store listing for the product.

13.7.6 Keywords as String()

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the keywords that are associated with the product in Partner Center.
Notes: This property only applies to StoreProduct objects that represent add-ons. These strings correspond to the value of the Keywords field in the properties page for the add-on in Partner Center.

13.7.7 RequestPurchaseAsync(CompletionHandler as WindowsStoreContextMBS.RequestPurchaseCompletedMBS, PurchaseProperties as WindowsStorePurchasePropertiesMBS = nil)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Requests the purchase for the specified app or add-on and displays the UI that is used to complete the transaction via the Microsoft Store.
Notes: This method provides the option to specify additional details for a specific offer within a large catalog of products that are represented by a single listing in the Microsoft Store, including the product name to display to the user during the purchase.

StoreID: The Store ID of the app or the add-on that you want to purchase for the current user.
PurchaseProperties: The optional purchase properties with display name or additional JSON.

13.7.8 SKUs as WindowsStoreSKUMBS()

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the list of available SKUs for the product.

13.7.9 Videos as WindowsStoreVideoMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the videos from the Windows Store listing for the product.
Notes: Returns a collection of WindowsStoreVideoMBS objects that represent the videos from the Windows Store listing for the product.

13.7.10 Properties

13.7.11 Description as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the product description from the Microsoft Store listing.
Notes: (Read only property)

13.7.12 ExtendedJsonData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets complete data for the product from the Store in JSON format.
Notes: Use the ExtendedJsonData property to access the complete data for the StoreProduct object as a JSON-formatted string in your code.
(Read only property)

13.7.13 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.7.14 HasDigitalDownload as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the product has optional downloadable content (DLC).
Notes: (Read only property)

13.7.15 InAppOfferToken as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the product ID for this product, if the current StoreProduct represents an add-on.
Notes: Returns the product ID for this product, if the current StoreProduct represents an add-on.
(Read only property)

13.7.16 IsInUserCollection as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the current user has an entitlement to use the default SKU of the product.
Notes: (Read only property)

13.7.17 Language as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the language for the data in the Microsoft Store listing for the product.
Notes: (Read only property)

13.7.18 LinkURI as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the URI to the Microsoft Store listing for the product.
Notes: An example URI is https://www.microsoft.com/store/apps/<Store ID for the product>. If there is no listing page for the product, this link resolves to the Microsoft Store home page.
(Read only property)

13.7.19 Price as WindowsStorePriceMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the price for the default SKU and availability for the product.
Notes: (Read only property)

13.7.20 ProductKind as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the type of the product.
Notes: These values are currently supported: Application, Game, Consumable, UnmanagedConsumable, and Durable.

see
https://docs.microsoft.com/en-us/uwp/api/windows.services.store.storeproduct.productkind?view=winrt-19041#Windows_
(Read only property)

13.7.21 StoreId as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the Store ID for this product.
Notes: For an app, this property corresponds to the Store ID that is available on the App identity page for the app in Partner Center.
(Read only property)

13.7.22 Title as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the product title from the Microsoft Store listing.
Notes: (Read only property)

13.7.23 Delegates

13.7.24 GetIsAnySkuInstalledAsyncCompletedMBS(ErrorCode as Integer, Installed as Boolean)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The delegate triggered by GetIsAnySkuInstalledAsync when completed.

13.8 class WindowsStoreProductQueryResultMBS

13.8.1 class WindowsStoreProductQueryResultMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides response data for a request to retrieve details about products that can be purchased from within the current app.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

13.8.2 Methods

13.8.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.8.4 Properties

13.8.5 ExtendedError as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the collection of products returned by the request.
Notes: A dictionary of key and value pairs, where each key is a Store ID for the add-on and the value is a StoreProduct object that represents the add-on.
(Read only property)

13.8.6 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.8.7 Products as Dictionary

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the error code for the request, if the operation encountered an error.
Notes: (Read only property)

13.9 class WindowsStoreProductResultMBS

13.9.1 class WindowsStoreProductResultMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides response data for a request to retrieve details about the current app.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Selling Xojo apps on Windows Store

13.9.2 Methods

13.9.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.9.4 Properties

13.9.5 ExtendedError as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the error code for the request, if the operation encountered an error.
Notes: (Read only property)

13.9.6 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.9.7 Product as WindowsStoreProductMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets info about the current app.
Notes: (Read only property)

13.10 class WindowsStorePurchasePropertiesMBS

13.10.1 class WindowsStorePurchasePropertiesMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Contains additional details that you can pass to a purchase request for a product, including the product name to display to the user during the purchase.
Notes: The RequestPurchaseAsync methods of the WindowsStoreContextMBS, WindowsStoreProductMBS, WindowsStoreSkuMBS, and WindowsStoreAvailabilityMBS classes have overloads that accept an argument of this type.
Blog Entries

- MBS Xojo Plugins, version 20.4pr5
- Selling Xojo apps on Windows Store

13.10.2 Methods

13.10.3 Constructor(Name as String = "")

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Initializes a new instance of the StorePurchaseProperties class.
Notes: Optionally pass name.

13.10.4 Properties

13.10.5 ExtendedJsonData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets or sets a JSON-formatted string that contains extended data to pass with the purchase request to the Microsoft Store.
Notes: Use the ExtendedJsonData property to access the complete data for the StorePurchaseProperties object as a JSON-formatted string in your code. For more information about the structure of the data, see Data schemas for Store products.
If you want to associate the purchase request with a custom campaign, you can add a field named DevOfferId to the JSON string that is returned by this property and then assign the updated string to this property. You can then retrieve this value later by accessing the DeveloperOfferId property of a StoreCollectionData object. Here is an example JSON string that includes a DevOfferId field: " { \"DevOfferId\": \"your campaign ID\" } ".
(Read and Write property)

13.10.6 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.10.7 Name as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets or sets the product name that is displayed to the user during the purchase.
Notes: The specified name appears in the title bar of the purchase UI.
(Read and Write property)

13.11 class WindowsStorePurchaseResultMBS

13.11.1 class WindowsStorePurchaseResultMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides response data for a request to purchase an app or product that is offered by the app.
Notes: The RequestPurchaseAsync methods of the StoreContext, StoreProduct, StoreSku, or StoreAvailability classes return an object of this type.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Selling Xojo apps on Windows Store

13.11.2 Methods

13.11.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.11.4 Properties

13.11.5 ExtendedError as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the error code for the purchase request, if the operation encountered an error.
Notes: (Read only property)

13.11.6 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.11.7 Status as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the status of the purchase request.
Notes: (Read only property)

13.11.8 Constants

Purchase Status

Constant	Value	Description
kStatusAlreadyPurchased	1	The current user has already purchased the specified app or add-on.
kStatusNetworkError	3	The purchase request did not succeed because of a network connectivity error.
kStatusNotPurchased	2	The purchase request did not succeed.
kStatusServerError	4	The purchase request did not succeed because of a server error returned by the Microsoft Store.
kStatusSucceeded	0	The purchase request succeeded.

13.12 class WindowsStoreRateAndReviewResultMBS

13.12.1 class WindowsStoreRateAndReviewResultMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides response data for a request to rate and review the product.
Notes: Requires Windows 10, version 1809 (introduced in 10.0.17763.0)
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Selling Xojo apps on Windows Store

13.12.2 Methods

13.12.3 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.12.4 Properties

13.12.5 ExtendedError as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the error code for the request, if the operation encountered an error.
Notes: (Read only property)

13.12.6 ExtendedJsonData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the complete result data for a rate and review request in JSON format.
Notes: This includes information to determine if a user aborted the dialog and error details if the call was not successful.

Use the ExtendedJsonData property to access the complete data for the StoreRateAndReviewResult object as a JSON-formatted string in your code.
JSON Schema:

{ ”type”: ”object”, ”properties”: { ”status”: { ”enum”: [”success”, ”aborted”] } , ”data”: { ”type”: ”object”, ”properties”: { ”updated”: { ”type”: ”boolean” } } , ”required”: [”updated”] } , ”errorDetails”: { ”type”: ”string” } } , ”required”: [”status”, ”errorDetails”] }
(Read only property)

13.12.7 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.12.8 Status as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the status for the rate and review request for the product.
Notes: (Read only property)

13.12.9 WasUpdated as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the request to rate and review had a successful updated.
Notes: (Read only property)

13.12.10 Constants

Review Status

Constant	Value	Description
kStatusCanceledByUser	1	The request was canceled by the user.
kStatusError	3	The request encountered an error.
kStatusNetworkError	2	The request encountered a network error.
kStatusSucceeded	0	The request was successful.

13.13 class WindowsStoreSKUMBS

13.13.1 class WindowsStoreSKUMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Provides info for a stock keeping unit (SKU) of a product in the Microsoft Store.
Notes: A SKU is a code that uniquely identifies a particular version of a product or service. It is a very common term used in the field of inventory management. Products in the Store are organized in a hierarchy of product, SKU, and availability objects. Products are represented by StoreProduct objects. The SKUs for each product are represented by StoreSku objects, and the availabilities for each SKU are represented by StoreAvailability objects. For more information, see In-app purchases and trials.
To access the SKUs for a product, use the Skus property of the StoreProduct for the product in which you are interested.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- News from the MBS Xojo Plugins Version 20.4
- MBS Xojo Plugins, version 20.4pr5
- Selling Xojo apps on Windows Store

13.13.2 Methods

13.13.3 BundledSKUs as String()

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the list of Store IDs for the apps or add-ons that are bundled with this product SKU.

13.13.4 Constructor

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.13.5 GetIsInstalledAsync(CompletionHandler as GetIsInstalledAsyncCompletedMBS)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Indicates whether this product SKU is installed on the current device.
Notes: Starts an asynchronous operation that, on successful completion, returns true if this product SKU is installed on the current device; otherwise, false.

13.13.6 Images as WindowsStoreImageMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the images from the Microsoft Store listing for the product SKU.
Notes: Returns a collection of WindowsStoreImageMBS objects that represent the images from the Microsoft Store listing for the product SKU.

13.13.7 RequestPurchaseAsync(CompletionHandler as WindowsStoreContextMBS.RequestPurchaseCompletedMBS, PurchaseProperties as WindowsStorePurchasePropertiesMBS = nil)

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Requests the purchase for the specified app or add-on and displays the UI that is used to complete the transaction via the Microsoft Store.
Notes: This method provides the option to specify additional details for a specific offer within a large catalog of products that are represented by a single listing in the Microsoft Store, including the product name to display to the user during the purchase.

StoreID: The Store ID of the app or the add-on that you want to purchase for the current user.
PurchaseProperties: The optional purchase properties with display name or additional JSON.

13.13.8 Videos as WindowsStoreVideoMBS()

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the videos from the Microsoft Store listing for the product SKU.
Notes: Returns a collection of WindowsStoreVideoMBS objects that represent the videos from the Microsoft Store listing for the product SKU.

13.13.9 Properties

13.13.10 CustomDeveloperData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the custom developer data string (also called a tag) that contains custom information about the add-on that this product SKU represents.
Notes: The custom developer data provides a way for developers to associate custom contextual information with an add-on. For more information about setting this value for an add-on, see Enter add-on properties.
(Read only property)

13.13.11 Description as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the product SKU description from the Microsoft Store listing.
Notes: (Read only property)

13.13.12 ExtendedJsonData as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets complete data for the current product SKU from the Store in JSON format.
Notes: Use the ExtendedJsonData property to access the complete data for the StoreSku object as a JSON-formatted string in your code.
(Read only property)

13.13.13 Handle as Integer

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.13.14 IsInUserCollection as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the current user has an entitlement to use the current product SKU.
Notes: (Read only property)

13.13.15 IsSubscription as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the current product SKU is a subscription with recurring billing.
Notes: For more information about the subscription, see the WindowsStoreSubscriptionInfoMBS class and SubscriptionInfo property.
(Read only property)

13.13.16 IsTrial as Boolean

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets a value that indicates whether the current product SKU is a trial SKU.
Notes: (Read only property)

13.13.17 Language as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the language for the data in the Microsoft Store listing for the product SKU.
Notes: (Read only property)

13.13.18 Price as WindowsStorePriceMBS

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the price of the default availability for this product SKU.
Notes: (Read only property)

13.13.19 StoreId as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the Store ID of this product SKU.
Notes: The Store ID returned by this property has the format <product Store ID>/<SKU Store ID>, where:

- <product Store ID>is a 12-character alpha-numeric string, such as 9NBLGGH69M0B. This Store ID

is available in Partner Center, and it is returned by the StoreId property of the related StoreProduct object.

- <SKU Store ID>is a 4-character alpha-numeric string that identifies the SKU. An example complete Store ID returned by this property is 9NBLGGH69M0B/000N.

(Read only property)

13.13.20 Title as String

Plugin Version: 20.4, Platform: Windows, Targets: Desktop only.

Function: Gets the product SKU title from the Microsoft Store listing.
Notes: (Read only property)

13.13.21 Delegates

13.13.22 GetIsInstalledAsyncCompletedMBS(ErrorCode as Integer, Installed as Boolean)

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The delegate triggered by GetIsInstalledAsync when finished.

13.14 class WindowsStoreVideoMBS

13.14.1 class WindowsStoreVideoMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Represents a video that is associated with a product listing in the Microsoft Store.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- New in MBS Xojo Plugins in version 23.1
- MBS Xojo Plugins, version 23.1pr3

13.14.2 Methods

13.14.3 Constructor

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

13.14.4 Properties

13.14.5 Caption as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the caption for the video.
Notes: (Read only property)

13.14.6 Handle as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read only property)

13.14.7 Height as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the height of the video, in pixels.
Notes: (Read only property)

13.14.8 PreviewImage as WindowsStoreImageMBS

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the preview image that is displayed for the video.
Notes: (Read only property)

13.14.9 Uri as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the URI of the video.
Notes: (Read only property)

13.14.10 VideoPurposeTag as String

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the tag for the video.
Notes: (Read only property)

13.14.11 Width as Integer

Plugin Version: 23.1, Platform: Windows, Targets: Desktop only.

Function: Gets the width of the video, in pixels.
Notes: (Read only property)

Chapter 14

WindowsML

14.1 class WindowsMLExceptionMBS

14.1.1 class WindowsMLExceptionMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The exception class for Windows runtime exceptions in WindowsML Plugin part.
Notes: All exceptions should have the HRESULT as errorNumber and the message set.
Subclass of the RuntimeException class.

14.2 class WinLearningModelBindingMBS

14.2.1 class WinLearningModelBindingMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Used to bind values to named input and output features.
Blog Entries

- News from the MBS Xojo Plugins Version 20.5
- Playing with Machine Learning on Windows

14.2.2 Methods

14.2.3 BindWithDouble(name as string, shape() as Integer, values() as Double = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 64-bit floating point values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.4 BindWithFloat(name as string, shape() as Integer, values() as Single = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 32-bit floating point values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.5 BindWithFloat16(name as string, shape() as Integer, values() as Single = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 16-bit floating point values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.6 BindWithImage(name as string, file as folderItem)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given image file.
Notes: Maybe used with features needing image or tensor data.
See also:

- 14.2.7 BindWithImage(name as string, Path as String) 463

14.2.7 BindWithImage(name as string, Path as String)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given image file.
Notes: Maybe used with features needing image or tensor data.
See also:

- 14.2.6 BindWithImage(name as string, file as folderItem) 463

14.2.8 BindWithInt16(name as string, shape() as Integer, values() as Int16 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 16-bit signed integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.9 BindWithInt32(name as string, shape() as Integer, values() as Int32 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 32-bit signed integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.10 BindWithInt64(name as string, shape() as Integer, values() as Int64 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 64-bit signed integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.11 BindWithInt8(name as string, shape() as Integer, values() as Int8 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 8-bit signed integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.12 BindWithUInt16(name as string, shape() as Integer, values() as UInt16 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 16-bit unsigned integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.13 BindWithUInt32(name as string, shape() as Integer, values() as UInt32 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 32-bit unsigned integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.14 BindWithUInt64(name as string, shape() as Integer, values() as UInt64 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 64-bit unsigned integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.15 BindWithUInt8(name as string, shape() as Integer, values() as UInt8 = nil)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Binds a input feature with a given tensor array.
Notes: This is for 8-bit unsigned integer values.
Shape defines the array dimensions as given in Shape property in WinLearningModelTensorFeatureDescriptorMBS class.
If values is empty, we bind without passing values.

14.2.16 Clear

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Remove all bindings.

14.2.17 Constructor(Session as WinLearningModelSessionMBS)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Creates a WinLearningModelBindingMBS from the specified WinLearningModelSessionMBS.

14.2.18 HasKey(key as string) as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Determines whether the map view contains the specified key.
Notes: Returns true if the map view contains the specified key; otherwise, false.

14.2.19 SetDefaults

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Fills all tensor arrays with empty arrays.

14.2.20 Properties

14.2.21 Handle as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

14.2.22 Session as WinLearningModelSessionMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The related session.
Notes: (Read only property)

14.3 class WinLearningModelEvaluationResultMBS

14.3.1 class WinLearningModelEvaluationResultMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Get the results of the evaluation.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- Playing with Machine Learning on Windows

14.3.2 Methods

14.3.3 Constructor

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

14.3.4 GetTensorBoolean(name as string) as Boolean()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor boolean array.

14.3.5 GetTensorDouble(name as string) as Double()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor double array.

14.3.6 GetTensorFloat(name as string) as Single()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor float array.

14.3.7 GetTensorFloat16(name as string) as Single()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 16-bit float array.

14.3.8 GetTensorInt16(name as string) as Int16()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 16 bit signed integer array.

14.3.9 GetTensorInt32(name as string) as Int32()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 32 bit signed integer array.

14.3.10 GetTensorInt64(name as string) as Int64()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 64 bit signed integer array.

14.3.11 GetTensorInt8(name as string) as Int8()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 8 bit signed integer array.

14.3.12 GetTensorUInt16(name as string) as UInt16()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 16 bit unsigned integer array.

14.3.13 GetTensorUInt32(name as string) as UInt32()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 32 bit unsigned integer array.

14.3.14 GetTensorUInt64(name as string) as UInt64()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 64 bit unsigned integer array.

14.3.15 GetTensorUInt8(name as string) as UInt8()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Queries result feature as tensor 8 bit unsigned integer array.

14.3.16 OutputNames as String()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Gets the output feature names of the model.

14.3.17 Properties

14.3.18 CorrelationId as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The optional string that was passed to Evaluate function.
Notes: (Read only property)

14.3.19 ErrorStatus as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: If the evaluation failed, returns an error code for what caused the failure.
Notes: (Read only property)

14.3.20 Handle as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

14.3.21 Succeeded as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: True if the evaluation completed successfully; otherwise, false.
Notes: (Read only property)

14.4 class WinLearningModelFeatureDescriptorMBS

14.4.1 class WinLearningModelFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Describes the common properties that all features have.
Notes: This is an abstract class. You can't create an instance, but you can get one from various plugin functions.

14.4.2 Methods

14.4.3 Constructor

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

14.4.4 Properties

14.4.5 Description as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: A description of what this feature is used for in the model.
Notes: (Read only property)

14.4.6 Handle as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

14.4.7 Kind as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The kind of feature; use this to know which derived class to use.
Notes: Or use IsA operator in Xojo to determinate which subclass the plugin used.

(Read only property)

14.4.8 Name as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The name you use to bind values to this feature.
Notes: (Read only property)

14.4.9 Required as Boolean

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: If true, you must bind a value to this feature before calling Evaluate.
Notes: (Read only property)

14.4.10 Constants

Kinds

Constant	Value	Description
KindImage	3	The feature is an image, so use WinLearningModelImageFeatureDescriptorMBS class.
KindMap	2	The feature is a map, so use WinLearningModelMapFeatureDescriptorMBS class.
KindSequence	1	The feature is a sequence, so use WinLearningModelSequenceFeatureDescriptorMBS class.
KindTensor	0	The feature is a tensor, so use WinLearningModelTensorFeatureDescriptorMBS class.

Tensor Kind

Constant	Value	Description
TensorKindBoolean	9	The tensor type is Boolean.
TensorKindComplex128	15	Invalid type.
TensorKindComplex64	14	Invalid type.
TensorKindDouble	11	The tensor type is 64-bit floating point.
TensorKindFloat	1	The tensor type is 32-bit floating point.
TensorKindFloat16	10	The tensor type is 16-bit floating point.
TensorKindInt16	5	The tensor type is 16-bit signed integer.
TensorKindInt32	6	The tensor type is 32-bit signed integer.
TensorKindInt64	7	The tensor type is 64-bit signed integer.
TensorKindInt8	3	The tensor type is 8-bit signed integer.
TensorKindString	8	The tensor type is String.
TensorKindUInt16	4	The tensor type is 16-bit unsigned integer.
TensorKindUInt32	12	The tensor type is 32-bit unsigned integer.
TensorKindUInt64	13	The tensor type is 64-bit unsigned integer.
TensorKindUInt8	2	The tensor type is 8-bit unsigned integer.
TensorKindUndefined	0	Invalid type.

14.5 class WinLearningModelImageFeatureDescriptorMBS

14.5.1 class WinLearningModelImageFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Describes the properties of the image the model is expecting.
Notes: Subclass of the WinLearningModelFeatureDescriptorMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.

14.5.2 Properties

14.5.3 BitmapAlphaMode as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the expected alpha mode of the image.
Notes: (Read only property)

14.5.4 BitmapPixelFormat as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Specifies the expected pixel format (channel ordering, bit depth, and data type).
Notes: (Read only property)

14.5.5 Height as UInt32

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The expected image height.
Notes: (Read only property)

14.5.6 Width as UInt32

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The expected image width.
Notes: (Read only property)

14.5.7 Constants

Alpha Modes

Constant	Value	Description
BitmapAlphaModeIgnore	2	The alpha value is ignored.
BitmapAlphaModePremultiplied	0	The alpha value has been premultiplied. Each color is first scaled by the alpha value.
BitmapAlphaModeStraight	1	The alpha value has not been premultiplied. The alpha channel indicates the transparency of the color.

Bitmap Formats

Constant	Value	Description
BitmapPixelFormatBgra8	87	The pixel format is B8G8R8A8 unsigned integer.
BitmapPixelFormatGray16	57	The pixel format is 16 bpp grayscale.
BitmapPixelFormatGray8	62	The pixel format is 8 bpp grayscale.
BitmapPixelFormatNv12	103	The pixel format is NV12.
BitmapPixelFormatP010	104	The pixel format is P010.
BitmapPixelFormatRgba16	12	The pixel format is R16B16G16A16 unsigned integer.
BitmapPixelFormatRgba8	30	The pixel format is R8G8B8A8 unsigned integer.
BitmapPixelFormatUnknown	0	The pixel format is unknown.
BitmapPixelFormatYuy2	107	The pixel format is YUY2.

14.6 class WinLearningModelMapFeatureDescriptorMBS

14.6.1 class WinLearningModelMapFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The descriptor for a map, which is a collection of (key, value) pairs.
Notes: Subclass of the WinLearningModelFeatureDescriptorMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.

14.6.2 Properties

14.6.3 KeyKind as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Map keys can be tensor kinds.
Notes: (Read only property)

14.6.4 ValueDescriptor as WinLearningModelFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Map values can be feature kinds.
Notes: (Read only property)

14.7 class WinLearningModelMBS

14.7.1 class WinLearningModelMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Represents a trained machine learning model.
Example:

```
dim ModelFile as FolderItem =SpecialFolder.Desktop.Child("SqueezeNet.onnx")

if not ModelFile.Exists then
MsgBox "Please download model first!"
quit
end if

dim model as WinLearningModelMBS = WinLearningModelMBS.LoadFromFile(ModelFile)

if model = nil then
msgbox "Failed to load model!"
// Check path and you need Windows 10
quit
end if
```

Notes: This is the main object you use to interact with Windows ML. You use it to load, bind, and evaluate trained ONNX models:

- Load the model using one of the Load method.
- Enumerate the InputFeatures and OutputFeatures and bind to your model.
- Create a LearningModelSessionMBS and evalaute.

Requires Windows 10.
This is an abstract class. You can't create an instance, but you can get one from various plugin functions.
Blog Entries

- News from the MBS Xojo Plugins Version 20.5
- MBS Xojo Plugins, version 20.5pr1
- Playing with Machine Learning on Windows

14.7.2 Methods

14.7.3 Constructor

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The private constructor.

14.7.4 InputFeatures as WinLearningModelFeatureDescriptorMBS()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: A list of the model's input features.
Example:

```
dim model as WinLearningModelMBS // your model

dim inputFeatures() as WinLearningModelFeatureDescriptorMBS = model.InputFeatures
for each feature as WinLearningModelFeatureDescriptorMBS in inputFeatures

list.AddRow feature.Name

next
```

14.7.5 LoadFromFile(File as FolderItem) as WinLearningModelMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Loads a model for Windows Machine Learning.
Example:

```
dim ModelFile as FolderItem =SpecialFolder.Desktop.Child("SqueezeNet.onnx")

if not ModelFile.Exists then
MsgBox "Please download model first!"
quit
end if

dim model as WinLearningModelMBS = WinLearningModelMBS.LoadFromFile(ModelFile)

if model = nil then
msgbox "Failed to load model!"
// Check path and you need Windows 10
quit
```

```
end if
```

Notes: Please use an onnx file as you find them on various websites, e.g. start here:
https://docs.microsoft.com/en-us/windows/ai/windows-ml/get-onnx-model

Will rasie an exception about unregistered class if called on older Windows versions before 10.

14.7.6 LoadFromFilePath(Path as String) as WinLearningModelMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Loads a model for Windows Machine Learning.
Notes: Please use an onnx file as you find them on various websites, e.g. start here:
https://docs.microsoft.com/en-us/windows/ai/windows-ml/get-onnx-model

Will rasie an exception about unregistered class if called on older Windows versions before 10.

14.7.7 OutputFeatures as WinLearningModelFeatureDescriptorMBS()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: A list of the model's output features.
Example:

```
dim model as WinLearningModelMBS // your model

dim OutputFeatures() as WinLearningModelFeatureDescriptorMBS = model.OutputFeatures
for each feature as WinLearningModelFeatureDescriptorMBS in OutputFeatures

list.AddRow feature.Name

next
```

14.7.8 Properties

14.7.9 Author as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The name of the model author.
Notes: (Read only property)

14.7.10 Description as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: A description of the model.
Notes: (Read only property)

14.7.11 Domain as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The domain of the model.
Notes: (Read only property)

14.7.12 Handle as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

14.7.13 Metadata as Dictionary

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The metadata from the ONNX model.
Notes: (Read only property)

14.7.14 Name as String

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The name of the model.
Notes: (Read only property)

14.7.15 Version as Int64

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The version of the model.
Notes: (Read only property)

14.8 class WinLearningModelSequenceFeatureDescriptorMBS

14.8.1 class WinLearningModelSequenceFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: A descriptor for a sequence with an array of elements.
Notes: Subclass of the WinLearningModelFeatureDescriptorMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.

14.8.2 Properties

14.8.3 ElementDescriptor as WinLearningModelFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The feature descriptor for this sequence element.
Notes: (Read only property)

14.9 class WinLearningModelSessionMBS

14.9.1 class WinLearningModelSessionMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Used to evaluate machine learning models.
Blog Entries

- Playing with Machine Learning on Windows

14.9.2 Methods

14.9.3 Constructor(model as WinLearningModelMBS)

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Creates a session using the default device.
Notes: model: The trained machine learning model for this session.

14.9.4 Evaluate(bindings as WinLearningModelBindingMBS, correlationId as string = "") as WinLearningModelEvaluationResultMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Evaluate the machine learning model using the feature values bound in bindings.
Notes: bindings: Holder for associations between model inputs and variable instances.
correlationId: Optional user-supplied string to connect the output results.

MBS Plugins don't support all possible input/output combinations, so if you need something more, please let us know.

14.9.5 Properties

14.9.6 Handle as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The internal object reference.
Notes: (Read and Write property)

14.9.7 Model as WinLearningModelMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The trained machine learning model for this session.
Notes: (Read only property)

14.10 class WinLearningModelTensorFeatureDescriptorMBS

14.10.1 class WinLearningModelTensorFeatureDescriptorMBS

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: Tensors are multi-dimensional arrays of values.
Notes: The layout of tensors is row-major, with tightly packed contiguous data representing each dimension. The total size of a tensor is the product of the size of each dimension.
Subclass of the WinLearningModelFeatureDescriptorMBS class.
This is a subclass of an abstract class. You can't create an instance, but you can get one from various plugin functions.

14.10.2 Methods

14.10.3 Shape as Integer()

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The count and size of each dimension.

14.10.4 Properties

14.10.5 TensorKind as Integer

Plugin Version: 20.5, Platform: Windows, Targets: Desktop only.

Function: The data type of the tensor.
Notes: (Read only property)

Chapter 15

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Chapter 16

The FAQ

16.0.1 Can anyone help me convert seconds to time in this format hh:mm:ss?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sure, here's a routine I use (which has an advantage over the previously-posted Date-based solution in that you don't have to rely on the creation of an object – all that happens is some division and string concatenation):
Example:

```
Function SecsToTimeString(timeInSecs as Integer, padHours as boolean, padMinutes as boolean) as string
// Given an amount time (in seconds), generates a string representing that amount
// of time. The padHours and padMinutes parameters determine whether to display
// hours and minutes if their values are zero.

// Examples:
// timeInSecs = 90, padHours = true; returns "00:01:30"
// timeInSecs = 1, padHours = false, padMinutes = true; returns "00:01"
// timeInSecs = 3601, padMinutes = false; returns "01:00:01"

dim hours, minutes, seconds as Integer
dim hoursString, minutesString as string

hours = timeInSecs / 3600
minutes = (timeInSecs mod 3600) / 60
seconds = timeInSecs mod 60

if hours = 0 then
if padHours then
hoursString = "00:"
else
hoursString = ""
end if
```

```
else
hoursString = Format(hours, "##\:")
end if
if minutes = 0 then
if hours <>0 or padMinutes then
minutesString = "00:"
else
minutesString = ""
end if
else
minutesString = Format(minutes, "00\:")
end if

return hoursString + minutesString + Format(seconds, "00")
End Function
```

Notes: (from the rb mailinglist)

16.0.2 Do you have plugins for Android?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Since there is no plugin SDK for Android, we have no way to make a plugin for Android.
Notes: We support macOS, Windows, Linux and iOS.

16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use functions from NSColor to get proper highlight color in RGB:
Example:

```
Function ProperHighlightColor(active as Boolean) As Color
#if TargetCocoa
Dim theColor As NSColorMBS
If active Then
theColor = NSColorMBS.alternateSelectedControlColor
Else
theColor = NSColorMBS.secondarySelectedControlColor
End If

Dim rgbColor As NSColorMBS = theColor.colorUsingColorSpaceName(NSColorSpaceMBS.NSCalibrate-
```

```
dRGBColorSpace)
If rgbColor <>Nil Then
Dim red as Integer = rgbColor.redComponent * 255.0
Dim green as Integer = rgbColor.greenComponent * 255.0
Dim blue as Integer = rgbColor.blueComponent * 255.0
Return RGB(red, green, blue)
Else
Return HighlightColor
End If
#else
return HighlightColor
#endif
End Function
```

Notes: As you see we convert color to Calibrated RGB for best results.
See also:

- 16.0.4 How to catch delete key? 499
- 16.0.5 How to convert cmyk to rgb? 500
- 16.0.6 How to delete a folder? 501
- 16.0.7 How to detect if CPU if 64bit processor? 502
- 16.0.8 How to query variant type string for a variant? 503
- 16.0.9 How to refresh a htmlviewer on Windows? 504

16.0.4 How to catch delete key?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code in keydown event catches delete or backspace keys.
Example:

```
Function KeyDown(Key As String) As Boolean
if asc(key) = 8 or asc(key) = 127 then
MsgBox "Delete"
Return true
end if
End Function
```

See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498

- 16.0.5 How to convert cmyk to rgb? 500
- 16.0.6 How to delete a folder? 501
- 16.0.7 How to detect if CPU if 64bit processor? 502
- 16.0.8 How to query variant type string for a variant? 503
- 16.0.9 How to refresh a htmlviewer on Windows? 504

16.0.5 How to convert cmyk to rgb?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

The following is the code to convert cmyk values to an RGB color datatype.
It's just a basic estimate of the color values. If you are looking for completely color accurate solution, this is not it. It should work for most people. :)
Example:

```
Function CMYKToRGB(c as Integer, m as Integer, y as Integer, k as Integer) As color
// converts c,m,y,k values (0-100) to color data type RGB
// place this in a method. Supply C,M,Y,K values-
// it returns color datatype


dim color_RGB as color
dim r, g, b as Integer

r=255-round(2.55*(c+k))
if r<0 then
r=0
end if
g=255-round(2.55*(m+k))
if g<0 then
g=0
end if
b=255-round(2.55*(y+k))
if b<0 then
b=0
end if

color_RGB=RGB(r,g,b)

return color_RGB

End Function
```

Notes:

(from the rb mailinglist)
See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498
- 16.0.4 How to catch delete key? 499
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16.0.6 How to delete a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following is the code deletes a folder recursively.
Example:

```
Sub deletefolder(f as folderitem)
dim files(-1) as FolderItem

if f=nil then Return

// delete single file
if f.Directory=false then
f.Delete
Return
end if

// get a list of all items in that folder
dim i,c as Integer
c=F.Count
for i=1 to c
files.Append f.TrueItem(i)
next

// delete each item
for each fo as FolderItem in files
if fo=nil then
' ignore
elseif fo.Directory then
deletefolder fo
fo.delete
else ' file
```

```
fo.Delete
end if
next

f.Delete
End Sub
```

See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498
- 16.0.4 How to catch delete key? 499
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- 16.0.7 How to detect if CPU if 64bit processor? 502
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- 16.0.9 How to refresh a htmlviewer on Windows? 504

16.0.7 How to detect if CPU if 64bit processor?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Via CPUID you can ask CPU:
Example:

```
dim c as new CPUIDMBS

if c.Flags(CPUIDMBS.kFeatureLM) then
MsgBox "64-bit CPU"
else
MsgBox "32-bit CPU"
end if
```

Notes: Should work on all intel compatible CPUs.
See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498
- 16.0.4 How to catch delete key? 499
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16.0.8 How to query variant type string for a variant?

Plugin Version: 20.5, Platforms: macOS, Linux, Windows.

Answer: The following example function returns type string for variant.
Example:

```
Public Function VariantTypeString(v as Variant) as string
// Xojo's VarType doesn't know Unsigned integers
'Dim type As Integer = VarType(v)

// MBS VarType can detect unsigned integer
Dim type As Integer = GetVariantTypeMBS(v)

Dim IsArray As Boolean = BitwiseAnd(type, Variant.TypeArray) = Variant.TypeArray

// type without array
type = BitwiseAnd(type, Bitwise.OnesComplement(Variant.TypeArray))

// build a dictionary to map types on first call
Static TypeMap As Dictionary
If TypeMap = Nil Then
TypeMap = New Dictionary
TypeMap.Value(Variant.TypeBoolean) = "Boolean"
TypeMap.Value(Variant.TypeCFStringRef) = "CFStringRef"
TypeMap.Value(Variant.TypeColor) = "Color"
TypeMap.Value(Variant.TypeCString) = "CString"
TypeMap.Value(Variant.TypeCurrency) = "Currency"
TypeMap.Value(Variant.TypeDate) = "Date"
TypeMap.Value(Variant.TypeDateTime) = "DateTime"
TypeMap.Value(Variant.TypeDouble) = "Double"
TypeMap.Value(Variant.TypeInt32) = "Int32"
TypeMap.Value(Variant.TypeInt64) = "Int64"
TypeMap.Value(Variant.TypeInteger) = "Integer"
TypeMap.Value(Variant.TypeNil) = "Nil"
TypeMap.Value(Variant.TypeObject) = "Object"
TypeMap.Value(Variant.TypeOSType) = "OSType"
TypeMap.Value(Variant.TypePString) = "PString"
TypeMap.Value(Variant.TypePtr) = "Ptr"
TypeMap.Value(Variant.TypeSingle) = "Single"
TypeMap.Value(Variant.TypeString) = "String"
TypeMap.Value(Variant.TypeStructure) = "Structure"
TypeMap.Value(Variant.TypeText) = "Text"
TypeMap.Value(Variant.TypeWindowPtr) = "WindowPtr"
TypeMap.Value(Variant.TypeWString) = "WString"

// MBS extra types
TypeMap.Value(Variant.TypeInt32+100) = "UInt32"
TypeMap.Value(Variant.TypeInt64+100) = "UInt64"
```

```
End If

// lookup type

#if DebugBuild then
If Not TypeMap.HasKey(type) Then
Break // missing type
End If
#endif

If IsArray Then
Return "Array of " + TypeMap.Lookup(type,"?")
Else
Return TypeMap.Lookup(type,"?")
End If
End Function
```

See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498
- 16.0.4 How to catch delete key? 499
- 16.0.5 How to convert cmyk to rgb? 500
- 16.0.6 How to delete a folder? 501
- 16.0.7 How to detect if CPU if 64bit processor? 502
- 16.0.9 How to refresh a htmlviewer on Windows? 504

16.0.9 How to refresh a htmlviewer on Windows?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can ask the browser to reload the website with this code line:
Example:

```
call htmlViewer1.IERunJavaScriptMBS("javascript:document.location.reload()")
```

See also:

- 16.0.3 How do I get the proper highlight color on Mac OS X for active/inactive selection? 498
- 16.0.4 How to catch delete key? 499
- 16.0.5 How to convert cmyk to rgb? 500

- 16.0.6 How to delete a folder? 501
- 16.0.7 How to detect if CPU if 64bit processor? 502
- 16.0.8 How to query variant type string for a variant? 503

16.0.10 Is there an example for vector graphics in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this example inside the paint event of a window:
Example:

```
dim v as Group2D
dim r as RectShape
dim s as StringShape

const pi=3.14

s=new StringShape
s.Text="Hello World!"
s.TextFont="Geneva"
s.TextSize=24
s.FillColor=rgb(0,0,255)
s.Italic=true
s.y=5
s.x=0

r=new RectShape

r.X=0
r.y=0
r.Height=100
r.Width=180
r.BorderColor=rgb(255,0,0)
r.FillColor=rgb(0,255,0)
r.BorderWidth=5
r.Border=50

v=new Group2d
v.Append r
v.Append s
v.Rotation=pi*-20.0/180.0
v.x=150
v.y=150

g.DrawObject v
```

16.0.11 Picture functions do not preserve resolution values?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the picture functions return pictures with no/default resolution values.
Example:

```
dim l as Picture = LogoMBS(500)

l.HorizontalResolution = 300
l.VerticalResolution = 300

dim r as Picture = l.Rotate90MBS

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)

r.HorizontalResolution = l.HorizontalResolution
r.VerticalResolution = l.VerticalResolution

MsgBox str(r.HorizontalResolution)+" x "+str(r.VerticalResolution)
```

Notes: So please fix them yourself after calling a function.

Maybe in the future this changes, but currently you can't really set this easily from plugin code.

16.0.12 A toolbox call needs a rect - how do I give it one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Fill a memoryblock like this:
Example:

```
Dim MB As Memoryblock
MB = NewMemoryBlock(8)
MB.Short(0) = window1.Top
MB.Short(2) = window1.Left
MB.Short(4) = window1.Height+window1.Top // bottom
MB.Short(6) = window1.Width+window1.Left // right
```

16.0.13 API client not supported?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you get this exception message on SQLConnectionMBS.Connect, we may have a problem.
Notes: First case is that the given thing is not supported (e.g. MS SQL directly on Mac).
Second case is that the plugin compilation went wrong and the support for the database was not linked into the plugin. Like MySQL missing or MS SQL on Windows missing. In that case please contact us to fix the plugin.

16.0.14 Can I access Access Database with Java classes?

Plugin Version: all, Platform: Windows.

Answer: You can use ucanaccess to access databases created with Microsoft
Example:

```
dim options(-1) as string

// load all the jar files we have in a folder called java:

dim appFolder as FolderItem = GetFolderItem("")

Dim count as Integer = appFolder.Parent.Child("java").Count
dim libjs() as string
For i as Integer = 1 to count
Dim f As FolderItem = appFolder.Parent.Child("java").item(i)
If f <>Nil and f.Exists Then
libjs.append f.NativePath+";"
End If
Next

// now init virtual machine
dim librery as string = Join(libjs, "")
dim vm as new JavaVMMBS(librery)

if vm.Handle = 0 then
MsgBox "Failed to initialize virtual machine"
else
// now make a new database connection with ucanaccess
dim d as new JavaDatabaseMBS(vm,"net.ucanaccess.jdbc.UcanaccessDriver")
Dim DbFile as FolderItem = appFolder.Parent.Child("Database11.accdb")
dim j as JavaConnectionMBS = d.getConnection("jdbc:ucanaccess://"+DbFile.NativePath)

// select and show values
dim r as JavaResultSetMBS = j.MySelectSQL("Select * From test")
while r.NextRecord
MsgBox r.getString("FirstName") +" "+ r.getString("LastName")
wend

end if
```

```
Exception e as JavaExceptionMBS
MsgBox e.message+" errorcode: "+str(e.ErrorNumber)
```

Notes: see website:
http://ucanaccess.sourceforge.net/site.html

16.0.15 Can I create PDF from Xojo Report using DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, we have a graphics class integration for DynaPDF.
Notes: Since MBS Plugin in version 19.2, we can integrate reports with Xojo.

16.0.16 Can I use AppleScripts in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Example:

```
dim a as new AppleScriptMBS

// query my application name
a.Compile "tell application ""System Events"" to return name of current application"

// run
a.Execute

// show result
label1.text = a.Result

// shows something like "My Application.fcgi.debug"
```

Notes: This can be useful to control the server from remote, if and only if the your sever is running Mac OS X.

16.0.17 Can I use graphics class with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sorry, no. We can't provide a graphics subclass from plugin.
Notes: The is a feature request to allow graphics subclasses:
Feedback case 11391: feedback://showreport?report_id=11391

16.0.18 Can I use sockets on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, but they run on the server, not on the client.
Notes: You can use HTTPSocket, SMTPSocket, POP3Socket, SMTPSecureSocket, SecurePOP3Socket, EasyTCPSocket, EasyUDPSocket, AutoDiscovery, our Bonjour classes or our CURL* classes. But all of them work on the server, not on the client.

This means if you search for a printer with Bonjour, you can find the printers in the local network on your server hosting site. Using SMTPSocket may be a good idea for sending emails from the server like notifications.

16.0.19 Can I use your ChartDirector plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our ChartDirector plugin works just fine on the Xojo Web Edition.
Example:

```
// The data for the pie chart
dim data(-1) as Double=array(55.0, 18.0, 25.0, 22.0, 18.0, 30.0, 35.0)

// The labels for the pie chart, Words are choosen random to check font!
dim labels(-1) as string=array("Germany","Italy","France","Spain","UK","Poland","Russia")

// The colors to use for the sectors
dim colors(-1) as Integer

colors.Append &h66aaee
colors.Append &heebb22
colors.Append &hbbbbbb
colors.Append &h8844ff

if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype/msttcorefonts"
end if

// Create a PieChart object of size 360 x 300 pixels
dim c as new CDPieChartMBS(700, 600)
```

```
c.setBackground(c.linearGradientColor(0, 0, 0, c.getHeight(), &h0000cc, &h000044))
c.setRoundedFrame(&hffffff, 16)
dim tt as CDTextBoxMBS = c.addTitle("ChartDirector Demonstration", "timesbi.ttf", 18)
tt.setMargin(0, 0, 16, 0)
tt.setFontColor(&hFFFFFF)

// Set the center of the pie at (180, 140) and the radius to 100 pixels
c.setPieSize 350,300,150
// Set the sector colors
c.setColors(c.kDataColor, colors)

// Draw the pie in 3D with a pie thickness of 20 pixels
c.set3D(20)

dim t as CDTextBoxMBS = c.setLabelStyle("arialbd.ttf", 10, &h000000)
t.setBackground(CDPieChartMBS.kSameAsMainColor, CDPieChartMBS.kTransparent, CDPieChartMBS.soft-
Lighting(CDPieChartMBS.kRight, 0))
t.setRoundedCorners(8)

// Use local gradient shading for the sectors, with 5 pixels wide
// semi-transparent white (bbffffff) borders
c.setSectorStyle(CDPieChartMBS.kLocalGradientShading, &hbbffffff, 0)

// Set the pie data and the pie labels
c.setData data,labels
call c.setLabelStyle "arialbd.ttf",18

dim pic as picture = c.makeChartPicture
dim wp as new WebPicture(pic, Picture.FormatJPEG) // JPEG makes it smaller and faster

ImageView1.Picture=wp
```

Notes: Be aware that our plugin produces pictures for you, which you assign to ImageViews. Tranfserring those pictures takes time, so you can optimize that with using WebPicture class. There you can decide between different compressions to improve speed (use JPEG instead of PNG).

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

16.0.20 Can I use your DynaPDF plugin on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, our DynaPDF plugin works just fine on the Xojo Web Edition.
Notes: PDF files are created on the server. You may want to offer a preview to the user which uses reduced resolution images to reduce the time to download the PDF.

See our Create PDF example for the Xojo Web Edition.

16.0.21 Can I use your plugin controls on a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: No.

16.0.22 Can you get an unique machine ID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There is nothing like an unique machine ID.
Notes: 1:
You can use the MAC IDs of the network interfaces.
This can be changed by the user with software tools.
And the list of network interfaces changes if user reorder the interfaces.

2:
You can use the system folder creation date/time.
This may stay equal after cloning machines or after migration to new PC.

3:
You can use the Mac Serialnumber.
Mac only and it can happen that a Mac does not have a serial number.

4:
You can use the x86 CPU ID.
This is x86 CPU only and does not avoid running on the same CPU in different PCs.

16.0.23 ChartDirector: Alignment Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Alignment Specification
Notes: In many ChartDirector objects, you may specify the alignment of the object's content relative to its boundary. For example, for a TextBox object, you may specify the text's alignment relative to the box boundary by using TextBox.setAlignment.

The ChartDirector API defines several constants for the alignment options.

ConstantValueDescription

BottomLeft	1	The leftmost point on the bottom line.
BottomCenter	2	The center point on the bottom line.
BottomRight	3	The rightmost point on the bottom line.
Left	4	The leftmost point on the middle horizontal line.
Center	5	The center point on the middle horizontal line.
Right	6	The rightmost point on the middle horizontal line.
TopLeft	7	The leftmost point on the top line.
TopCenter	8	The center point on the top line.
TopRight	9	The rightmost point on the top line.
Bottom	2	The center point on the bottom line. Same as BottomCenter.
Top	8	The center point on the top line. Same as TopCenter.
TopLeft2	10	An alternative top-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopLeft2 refers to refers to the left of the top side, while TopLeft refers to the top of the left side. The reverse applies for a horizontal axis.
TopRight2	11	An alternative top-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, TopRight2 refers to refers to the right of the top side, while TopRight refers to the top of the right side. The reverse applies for a horizontal axis.
BottomLeft2	12	An alternative bottom-left position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomLeft2 refers to refers to the left of the bottom side, while BottomLeft refers to the bottom of the left side. The reverse applies for a horizontal axis.
BottomRight2	13	An alternative bottom-right position used in Axis.setTitlePos for axis title positioning only. For a vertical axis, BottomRight2 refers to refers to the right of the bottom side, while BottomRight refers to the bottom of the right side. The reverse applies for a horizontal axis.

16.0.24 ChartDirector: Color Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Color Specification
Notes: Many functions in the ChartDirector API accept colors as parameters. ChartDirector supports col-

ors specified in web and HTML compatible ARGB format, in which ARGB refers to the Alpha transparency, Red, Green and Blue components of the color.

In addition to ARGB colors, ChartDirector supports ”dynamic” colors. A dynamic color is a color that changes depending on the position of the pixels. The ”dynamic” colors that ChartDirector supports include ”pattern colors”, ”metal colors”, ”gradient colors”, ”zone colors” and ”dash line colors”.

ChartDirector supports specifying colors indirectly using ”palette colors”. When a ”palette color” is used, the color is specified as an index to a palette. The actual color is looked up from the palette.ARGB Color
ARGB color consists of 4 components - alpha transparency, red, green and blue. The four components are encoded as a 32-bit number, with each component occupying 8 bits. In hexadecimal notation, it is AARRGGBB, where AA, RR, GG and BB are the alpha transparency, red, green and blue components.

Each component ranges from 00 - FF (0 - 255), representing its intensity. For example, pure red color is 00FF0000, pure green color is 0000FF00, and pure blue color is 000000FF. White color is 00FFFFFF, and black color is 00000000.

Most programming language requires you to put special prefix in front of hexadecimal characters. For C++, the prefix is ”0x”. For example, the syntax for the hexadecimal number 00FFFFFF is 0x00FFFFFF, or simply 0xFFFFFF.
For the alpha transparency component, a zero value means the color is not transparent all at. This is equivalent to traditional RGB colors. A non-zero alpha transparency means the the color is partially transparent. The larger the alpha transparency, the more transparent the color will be. If a partially transparent color is used to draw something, the underlying background can still be seen.

For example, 80FF0000 is a partially transparent red color, while 00FF0000 is a non-transparent red color.

Note that ChartDirector’s ARGB color is web and HTML compatible. For example, red is FF0000, the same as in HTML. There are many resources on the web that provide tables in which you can click a color and it will show its HTML color code. These color codes can be used in ChartDirector.

If alpha transparency is FF (255), the color is totally transparent. That means the color is invisible. It does not matter what the RGB components are. So in ChartDirector, only one totally transparent color is used - FF000000. All other colors of the form FFnnnnnn are reserved to represent palette colors and dynamic colors, and should not be interpreted as the normal ARGB colors.

The totally transparent color FF000000 is often used in ChartDirector to disable drawing something. For example, if you want to disable drawing the border of a rectangle, you can set the border color to totally transparent.

For convenience, ChartDirector defines a constant called Transparent, which is equivalent to FF000000.Pattern Color

A pattern color is a dynamic color that changes according to a 2D periodic pattern. When it is used to fill an area, the area will look like being tiled with a wallpaper pattern.

Pattern colors are created using BaseChart.patternColor, BaseChart.patternColor2, DrawArea.patternColor and DrawArea.patternColor2. The patternColor method creates pattern colors using an array of colors as a bitmap. The patternColor2 method creates pattern colors by loading the patterns from image files.

These methods return a 32-bit integer acting as a handle to the pattern color. The handle can be used in any ChartDirector API that expects a color as its input.Metal Color
A metal color is a color of which the brightness varies smoothly across the chart surface as to make the surface looks shiny and metallic. ChartDirector supports using any color as the base color of the metal color. In particular, using yellow and grey as the base colors will result in metal colors that look gold and silver.

Metal colors are most often used as background colors of charts. They are created using CDBaseChartMBS.metalColor, CDBaseChartMBS.goldColor and CDBaseChartMBS.silverColor. The first method allows you to specify an arbitrary base color. The second and third methods use yellow and grey as the base colors, resulting in gold and silver metal colors.

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.Gradient Color
A gradient color is a color that changes progressively across a direction.

Gradient colors are created using BaseChart.gradientColor, BaseChart.gradientColor2, DrawArea.gradientColor and DrawArea.gradientColor2. The gradientColor method creates a 2-point gradient color that changes from color A to color B. The gradientColor2 method creates a multi-point gradient colors that changes from color A to B to C ....

These methods return a 32-bit integer acting as a handle to the gradient color. The handle can be used in any ChartDirector API that expects a color as its input.

One common use of multi-point gradient colors is to define colors that have metallic look and feel. Please refer to DrawArea.gradientColor2 for details.Dash Line Colors
A dash line color is a color that switches on and off periodically. When used to draw a line, the line will appear as a dash line.

Dash line colors are created using BaseChart.dashLineColor and DrawArea.dashLineColor. They accept a line color and a dash pattern code as arguments, and return a 32-bit integer acting as a handle to the dash line color. The handle can be used in any ChartDirector API that expects a color as its input.Zone Colors
A zone color is for XY charts only. It is a color that automatically changes upon reaching a data threshold value along the x-axis or y-axis. Zone colors are created using Layer.xZoneColor, Layer.yZoneColor, XYChart.xZoneColor or XYChart.yZoneColor.Palette Colors
Palette colors are colors of the format FFFFnnnn, where the least significant 16 bits (nnnn) are the index to the palette. A palette is simply an array of colors. For a palette color, the actual color is obtained by

looking up the palette using the index. For example, the color FFFF0001 is the second color in the palette (first color is index 0).

The colors in the palette can be ARGB colors or "dynamic" colors (pattern, gradient and dash line colors).

The first eight palette colors have special significance. The first three palette colors are the background color, default line color, and default text color of the chart. The 4th to 7th palette colors are reserved for future use. The 8th color is a special dynamic color that is equal to the data color of the "current data set".

The 9th color (index = 8) onwards are used for automatic data colors. For example, in a pie chart, if the sector colors are not specified, ChartDirector will automatically use the 9th color for the first sector, the 10th color for the second sector, and so on. Similarly, for a multi-line chart, if the line colors are not specified, ChartDirector will use the 9th color for the first line, the 10th color for the second line, and so on.

The ChartDirector API defines several constants to facilitate using palette colors.

ConstantValueDescription

Palette	FFFF0000	The starting point of the palette. The first palette color is (Palette + 0). The nth palette color is (Palette + n - 1).
BackgroundColor	FFFF0000	The background color.
LineColor	FFFF0001	The default line color.
TextColor	FFFF0002	The default text color.
[Reserved]	FFFF0003 - FFFF0006	These palette positions are reserved. Future versions of ChartDirector may use these palette positions for colors that have special significance.
SameAsMainColor	FFFF0007	A dynamic color that is equal to the data color of the current data set. This color is useful for objects that are associated with data sets. For example, in a pie chart, if the sector label background color is SameAsMainColor, its color will be the same as the corresponding sector color.
DataColor	FFFF0008	The starting point for the automatic data color allocation.

When a chart is created, it has a default palette. You may modify the palette using BaseChart.setColor, BaseChart.setColors, or BaseChart.setColors2.

The advantages of using palette colors are that you can change the color schemes of the chart in one place. ChartDirector comes with several built-in palettes represented by the following predefined constants.

ConstantDescription

16.0.25 ChartDirector: Font Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

defaultPalette	An array of colors representing the default palette. This palette is designed for drawing charts on white backgrounds (or lightly colored backgrounds).
whiteOnBlackPalette	An array of colors useful for drawing charts on black backgrounds (or darkly colored backgrounds).
transparentPalette	An array of colors useful drawing charts on white backgrounds (or lightly colored backgrounds). The data colors in this palette are all semi-transparent.

Answer: ChartDirector: Font Specification
Notes: Font Name
In ChartDirector, the font name is simply the file name that contains the font. For example, under the Windows platform, the "Arial" font is "arial.ttf", while the "Arial Bold" font is "arialbd.ttf".

NOTE: Mac OS X Specific Information
In Mac OS X, in addition to ".ttf", ChartDirector also supports Mac OS X font file formats, such as Font Suitcase files and Datafork files (.dfont). These files often contain multiple fonts. For example, the "GillSans.dfont" file contains 6 fonts.

So in addition to the file name, an index is needed to determine the font. The index is specified by appending a " | " character to the font name, followed by the index number. For example, the third font in "GillSans.dfont" is denoted as "GillSans.dfont | 2". (Note: The first font starts at 0.) If no index number is provided, the first font is assumed.

ChartDirector also supports using Mac OS X Font Manager names. For example, one may use "Gill Sans Light Italic" instead of using "GillSans.dfont | 1" as the font name. However, the Mac OS X Font Manager is active only if someone has logged into the Mac GUI console, so this method is only recommended for developing applications that run on the GUI console.

The sample programs that come with ChartDirector are designed to run on all operating systems, so they use generic font file names (eg. "arial.ttf") instead of Mac OS X specific names. To allow them to run on Mac OS X, ChartDirector on Mac OS X has a built-in table to map common font file names to Mac OS X font names:

"arial.ttf", "arialbd.ttf", "ariali.ttf" and "arialbi.ttf" are mapped to "Arial | 0" (Arial), "Arial | 1" (Arial Bold), "Arial | 2" (Arial Italic) and "Arial | 3" (Arial Bold Italic)

"times.ttf", "timesbd.ttf", "timesi.ttf" and "timesbi.ttf" are mapped to "Times New Roman | 0" (Times New Roman), "Times New Roman | 1" (Times New Roman Bold), "Times New Roman | 2" (Times New Roman Italic) and "Times New Roman | 3" (Times New Roman Bold Italic)

"cour.ttf", "courbd.ttf", "couri.ttf" and "courbi.ttf" are mapped to "Courier New | 0" (Courier New), "Courier New | 1" (Courier New Bold), "Courier New | 2" (Courier New Italic) and "Courier New | 3" (Courier New Bold Italic)

Font Location
ChartDirector on Windows does not come with any font files. It relies on the operating system's font files in the " [windows] \Fonts" directory. To see what fonts are installed in your operating system and their file names, use the File Explorer to view that directory.

ChartDirector on Windows will also search for the font files in the "fonts" subdirectory (if it exists) under the directory where the ChartDirector DLL "chartdir.dll" is installed. This is useful for private fonts. Also, for some especially secure web servers, the web anonymous user may not have access to the " [windows] \Fonts" directory. In this case, you may copy the font files to the above subdirectory.

ChartDirector on Mac OS X relies on operating system font files in "/Library/Fonts" and "/System/Library/Fonts".

ChartDirector on Linux, FreeBSD and Solaris assume the fonts files are in the "fonts" subdirectory under the directory where the ChartDirector shared object "libchartdir.so" is installed. ChartDirector on Linux, FreeBSD and Solaris come with a number of font files in the "fonts" subdirectory.

To keep the download size small, ChartDirector on Linux, FreeBSD and Solaris only come with some commonly used fonts. You may download additional fonts from the Internet. In particular, the Microsoft fonts at
http://sourceforge.net/project/showfiles.php?group_id=34153&release_id=105355
is highly recommended. Please refer to
http://www.microsoft.com/typography/faq/faq8.htm
on how you could use the fonts legally in your system.

ChartDirector supports True Type fonts (.ttf), Type 1 fonts (.pfa and .pfb) and Windows bitmap fonts (.fon). On Mac OS X, ChartDirector also supports Font Suitcase and Datafork (.dfont) files. On Linux, FreeBSD and Solaris, ChartDirector also supports Portable Compiled Fonts (.pcf fonts).

If you want ChartDirector to search other directories for the font files, you may list the directories in an environment variable called "FONTPATH".

If you specify an absolute path name for the font file, ChartDirector will use the absolute path name and will not search other directories.Artificial Boldening and Italicizing
Whereas most popular font comes with different styles for "normal", "bold", "italic" and "bold italic", some fonts only come with one style (the normal style). For example, the Monotype Corsiva font that comes with MS Office only has the normal style (mtcorsva.ttf). For these cases, you may append the "Bold" and/or "Italic" words after the font file name (separated with a space) to ask ChartDirector to artificially bolden and/or italicize the font. For example, you may specify the font name as "mtcorsva.ttf Bold".Font List
Instead of specifying a single font file as the font name, you may specify a list of font files as the font name, separated by semi-colons. This is useful when using international characters that are only available in some fonts.

For example, if you would like to use the Arial font ("arial.ttf") for western characters, and the MingLiu font "mingliu.ttc" for Chinese characters (since the Arial font does not have Chinese characters), you may specify the font name as "arial.ttf;mingliu.ttc". In this case, ChartDirector will try the Arial font first. If it cannot find a certain character there, it will try the MingLiu font.Indirect Font Names
ChartDirector supports several special keywords for specifying the font name indirectly. When these keywords are used as font names, ChartDirector will look up the actual font names from a font table. The keywords are as follows:

KeywordsDescription

"normal"	This default normal font, which is the first font in the font table. This is initially mapped to "arial.ttf" (Arial).
"bold"	The default bold font, which is the second font in the font table. This is initially mapped to "arialbd.ttf" (Arial Bold).
"italic"	The default italic font, which is the third font in the font table. This is initially mapped to "ariali.ttf" (Arial Italic).
"boldItalic"	The default bold-italic font, which is the fourth font in the font table. This is initially mapped to "arialbi.ttf" (Arial Bold Italic).
"fontN"	The (N + 1)th font in the font table (the first font is "font0").

The font table can be modified using BaseChart.setFontTable or DrawArea.setFontTable.

The advantage of using indirect font names is that you can change the fonts fonts in your charts in one place.Font Index
Most font files contain one font. However, it is possible a font file contains multiple fonts (that is, a font collection). For example, in True Type fonts, font files with extension ".ttc" may represent a font collection.

If a font file contains multiple font, the font index can be used to specify which font to use. By default, the font index is 0, which means the first font in the font file will be used.Font Size
The font size decides how big a font will appear in the image. The font size is expressed in a font unit called points. This is the same unit used in common word processors.

Instead of specifying font size, some ChartDirector API (eg. TextBox.setFontSize) allow you to specify font height and font width separately. You may use different point sizes for font height and font width to create special effects.Font Color
This is the color to draw the font. (See Color Specification on how colors are represented in ChartDirector.)Font Angle
This is the angle in degrees by which the font should be rotated anti-clockwise.Vertical Layout
By default, text are laid out horizontally, with characters being drawn from left to right.

ChartDirector also supports vertical layout, with characters being drawn from top to bottom. For example, you may use BaseChart.addText to add text that are laid out vertically. Vertical layout is common for

oriental languages such as Chinese, Japanese and Korean.

16.0.26 ChartDirector: Mark Up Language

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Mark Up Language
Notes: ChartDirector Mark Up Language (CDML) is a language for including formatting information in text strings by marking up the text with tags.

CDML allows a single text string to be rendered using multiple fonts, with different colors, and even embed images in the text.Font Styles
You can change the style of the text by using CDML tags. For example, the line:

<*font=timesi.ttf,size=16,color=FF0000>Hello <*font=arial.ttf,size=12,color=8000*>world!
will result in the following text rendered:

In general, all tags in CDML are enclosed by <* and *>. Attributes within the tags determine the styles of the text following the tags within the same block.

If you want to include <* in text without being interpreted as CDML tags, use «* as the escape sequence.

The following table describes the supported font style attributes in CDML. See Font Specification for details on various font attributes.

AttributeDescription

Set the following text to be in superscript style. This attribute does not need to have a value. (You may use ”super” as the attribute instead of ”super=1”.)

Note that unlike HTML tags, no double or single quotes are used in the tags. It is because CDML tags are often embedded as string literals in source code. The double or single quotes, if used, will conflict with the string literal quotes in the source code. Therefore in CDML, no quotes are necessary and they must not be used.

Also, unlike HTML tags, CDML uses the comma character as the delimiter between attributes. It is because certain attributes may contain embed spaces (such as the font file name). So space is not used as the delimiter and the comma character is used instead.

Note the font attribute above starts a new style section, while other attributes just modify the current style

font	Starts a new style section, and sets the font name. You may use this attribute without a value (that is, use "font" instead of "font=arial.ttf") to create a new style section without modifying the font name.
size	The font size.
width	The font width. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
height	The font height. This attribute is used to set the font width and height to different values. If the width and height are the same, use the size attribute.
color	The text color in hex format.
bgColor	The background color of the text in hex format.
underline	The line width of the line used to underline the following characters. Set to 0 to disable underline.
sub	Set the following text to be in subscript style. This attribute does not need to have a value. (You may use "sub" as the attribute instead of "sub=1".)
super	Set the following text to be in superscript style.

xoffset	Draw the following the text by shifting the text horizontally from the original position by the specified offset in pixels.
yoffset	Draw the following the text by shifting the text vertically from the original position by the specified offset in pixels.
advance	Move the cursor forward (to the right) by the number of pixels as specified by the value this attribute.
advanceTo	Move the cursor forward (to the right) to the position as specified by the value this attribute. The position is specified as the number of pixels to the right of the left border of the block. If the cursor has already passed through the specified position, the cursor is not moved.

section. You may use <*/font*>to terminate a style section, which will restore the font styles to the state before the style section.Blocks and Lines
In CDML, a text string may contain multiple blocks. A block may contain multiple lines of text by separating them with new line characters ("\n") or with <*br*>. The latter is useful for programming languages that cannot represent new line characters easily.

For example, the line:

<*size=15*><*block*><*color=FF*>BLOCK<*br*>ONE<*/*>and <*block*><*color=FF00*>BLOCK<*br*>TWO<
will result in the following text rendered:

The above example contains a line of text. The line contains two blocks with the characters " and " in between. Each block in turn contains two lines. The blocks are defined using <*block*>as the start tag and

<*/*>as the end tag.

When a block ends, font styles will be restored to the state before entering the block.Embedding Images
CDML supports embedding images in text using the following syntax:

<*img=my_image_file.png*>
where my_image_file.png is the path name of the image file.

For example, the line:

<*size=20*>A <*img=sun.png*>day
will result in the following text rendered:

ChartDirector will automatically detect the image file format using the file extension, which must either png, jpg, jpeg, gif, wbmp or wmp (case insensitive).

Please refer to BaseChart.setSearchPath or DrawArea.setSearchPath on the directory that ChartDirector will search for the file.

The <*img*>tag may optionally contain width and height attributes to specify its pixel width and height. In this case, ChartDirector will stretch or compress the image if necessary to the required width and height.Blocks Attributes
CDML supports nesting blocks, that is, a block can contain other sub-blocks. Attributes are supported in the <*block*>tag to control the alignment and orientation of the sub-blocks. The <*img=my_image_file.png*>is treated as a block for layout purposes.

For example, the line:

<*block,valign=absmiddle*><*img=molecule.png*><*block*>Hydrazino\nMolecule<*/*><*/*>
will result in the following text rendered:

The the above starts <*block,valign=absmiddle*>which specifies its content should align with each others in the vertical direction using the absolute middle alignment. The block contains an image, followed by a space characters, and then another block which has two lines of text.

The following table describes the supported attributes inside <*block*>tag:

AttributeDescription

The value baseline means the baseline of sub-blocks should align with the baseline of the block. The baseline

width	The width of the block in pixels. By default, the width is automatically determined to be the width necessary for the contents of the block. If the width attribute is specified, it will be used as the width of the block. If the width is insufficient for the contents, the contents will be wrapped into multiple lines.
height	The height of the block in pixels. By default, the height is automatically determined to be the height necessary for the contents of the block. If the height attribute is specified, it will be used as the height of the block.
maxwidth	The maximum width of the block in pixels. If the content is wider than maximum width, it will be wrapped into multiple lines.
truncate	The maximum number of lines of the block. If the content requires more than the maximum number of lines, it will be truncated. In particular, if truncate is 1, the content will be truncated if it exceeds the maximum width (as specified by maxwidth or width) without wrapping. The last few characters at the truncation point will be replaced with "...".
linespacing	The spacing between lines as a ratio to the default line spacing. For example, a line spacing of 2 means the line spacing is two times the default line spacing. The default line spacing is the line spacing as specified in the font used.
bgColor	The background color of the block in hex format.
valign	The vertical alignment of sub-blocks. This is for blocks that contain sub-blocks. Supported values are baseline, top, bottom, middle and absmiddle.

is the underline position of text. This is normal method of aligning text, and is the default in CDML. For images or blocks that are rotated, the baseline is the same as the bottom.

The value top means the top line of sub-blocks should align with the top line of the block.

The value bottom means the bottom line of sub-blocks should align with the bottom line of the block.

The value middle means the middle line of sub-blocks should align with the the middle line of the block. The middle line is the middle position between the top line and the baseline.

The value absmiddle means the absolute middle line of sub-blocks should align with the absolute middle line of the block. The absolute middle line is the middle position between the top line and the bottom line.

halign	The horizontal alignment of lines. This is for blocks that contain multiple lines. Supported values are left, center and right.

The value left means the left border of each line should align with the left border of the block. This is the default.

The value center means the horizontal center of each line should align with the horizontal center of the block.

The value right means the right border of each line should align with the right border of the block.

angle Rotate the content of the block by an angle. The angle is specified in degrees in counter-clockwise direction.

16.0.27 ChartDirector: Parameter Substitution and Formatting

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Parameter Substitution and Formatting
Notes: ChartDirector charts often contain a lot of text strings. For example, sector labels in pie charts, axis labels for x and y axes, data labels for the data points, HTML image maps, etc, are all text strings.

ChartDirector uses parameter substitution to allow you to configure precisely the information contained in the text and their format.
Format Strings
In parameter substitution, format strings are used to specify the entities to be include into labels and how to format numbers and dates.

For example, when drawing a pie chart with side label layout, the default sector label format string is:

" { label } ({ percent } %)"

When the sector label is actually drawn, ChartDirector will replace " { label } " with the sector name, and " { percent } " with the sector percentage. So the above label format will result is a sector label similar to "ABC (34.56%)".

You may change the sector label format by changing the format string. For example, you may change it to:

" { label } : US$ { value | 2 } K ({ percent } %)"

The sector label will then become something like "ABC: US$ 123.00 (34.56%)".

In general, in ChartDirector parameter substitution, parameters enclosed by curly brackets will be substituted with their actual values when creating the texts.

For parameters that are numbers or dates/times, ChartDirector supports a special syntax in parameter substitution to allow formatting for these values. Please refer to the Number Formatting and Date/Time Formatting sections below for details.

Parameter Expressions

ChartDirector supports numeric expressions in format strings. They are denoted by enclosing the expression with curly brackets and using "=" as the first character. For example:

"USD { value } (Euro { = { value } *0.9 })"

In the above, " { value } " will be substituted with the actual value of the sector. The expression " { = { value } *0.9 } " will be substituted with the actual value of the sector multiplied by 0.9.

ChartDirector parameter expressions support operators "+", "-", "*", "/", "%" (modulo) and "^" (exponentiation). Operators "*", "/", "%", "^" is computed first, followed by "+" and "-". Operators of the same precedence are computed from left to right). Parenthesis "(" and ")" can be used to change the computation order.

Parameters for Pie Charts

The following table describes the parameters available for pie charts.

Parameter	Description
sector	The sector number. The first sector is 0, while the nth sector is (n-1).
dataSet	Same as { sector } . See above.
label	The text label of the sector.
dataSetName	Same as { label } . See above.
value	The data value of the sector.
percent	The percentage value of the sector.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using BaseChart.addExtraField or BaseChart.addExtraField2.

Parameters for All XY Chart Layers

The followings are parameters that are apply to all XY Chart layers in general. Some layer types may have additional parameters (see below).

Note that certain parameters are inapplicable in some context. For example, when specifying the aggregate label of a stacked bar chart, the { dataSetName } parameter is inapplicable. It is because a stacked bar is composed of multiple data sets. It does not belong to any particular data set and hence does not have a data set name.

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for Line Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Trend Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Box-Whisker Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for HLOC and CandleStick Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Additional Parameters for Vector Layers
The followings are parameters that are in additional to the parameters for all XY Chart layers.

Parameters for All Polar Layers
The followings are parameters that are apply to all Polar Chart layers in general. Some layer types may have additional parameters (see below).

{ fieldN } means the extra field is indexed by the data point number. The Pth data point corresponds to the Pth element of the extra field.

Additional Parameters for PolarVector Layers
The followings are parameters that are in additional to the parameters for all Polar Chart layers.

Parameters for Axis
The following table describes the parameters available for pie charts.

Number Formatting
For parameters that are numbers, ChartDirector supports a number of formatting options in parameter substitution.

For example, if you want a numeric field { value } to have a precision of two digits to the right of the decimal point, use ',' (comma) as the thousand separator, and use '.' (dot) as the decimal point, and you may use { value | 2,. } . The number 123456.789 will then be displayed as 123,456.79.

For numbers, the formatting options are specified using the following syntax:

{ [param] | [a] [b] [c] [d] }

where:

If this field starts with "E" or "e", followed by a number, it means formatting the value using scientific notation with the specified number of decimal places. If the "E" or "e" is not followed by a number, 3 is assumed.

For example, { value | E4 } will format the value 10.3 to 1.0300E+1, and { value | e4 } will format the same value to 1.0300e+1.

If this field starts with "G" or "g", followed by a number, it means formatting the value using the scientific notation only if the value is large and requires more than the specified number of digits, or the value is less than 0.001. If scientific notation is used, the number following "G" or "g" also specifies the number of significant digits to use. If the "G" or "g" is not followed by a number, 4 is assumed.

For example, consider the format string { value | G4 } . The value 10 will be formatted to 10. The value 100000 will be formatted to 1.000E+5. Similarly, for { value | g4 } , the value 10 will be formatted to 10, while the value 100000 will be formatted to 1.000e+5.

If you skip this argument, ChartDirector will display the exact value using at most 6 decimal places.

You may skip [b] [c] [d] . In this case, the default will be used.

Date/Time Formatting
For parameters that are dates/times, the formatting options can be specified using the following syntax:

{ [param] | [datetime_format_string] }

where [datetime_format_string] must start with an english character (A-Z or a-z) that is not "G", "g", "E" or "e", and may contain any characters except ' } '. (If it starts with "G", "g", "E" or "e", it will be considered as a number format string.)

Certain characters are substituted according to the following table. Characters that are not substituted will be copied to the output.

For example, a parameter substitution format of { value | mm-dd-yyyy } will display a date as something similar to 09-15-2002. A format of { value | dd/mm/yy hh:nn:ss a } will display a date as something similar to 15/09/02 03:04:05 pm.

If you want to include characters in the format string without substitution, you may enclose the characters in single or double quotes.

For example, the format { value | mmm '<*color=dd0000*>'yyyy } will display a date as something like Jan <*color=dd0000*>2005 (the <*color=dd0000*>is a CDML tag to specify red text color). Note that the <*color=dd0000*>tag is copied directly without substitution, even it contains "dd" which normally will be substituted with the day of month.
Escaping URL/HTML/CDML characters
Parameter substitution is often used to create HTML image maps. In HTML, some characters has special meanings and cannot be used reliably. For example, the '>' is used to represent the end of an HTML tag.

Furthermore, if the field happens to be used as an URL, characters such as '?', '&' and '+' also have special meanings.

By default, ChartDirector will escape template fields used in URL and query parameters when generating image maps. It will modify URL special characters to the URL escape format "%XX" (eg. "?" will become "%3F"). After that, it will modify HTML special characters to the HTML escape format "&#nn;" (eg. ">" will become ">".). Similarly, it will escape other attributes in the image map using HTML escape format (but not URL escape format).

In addition to escaping HTML and URL special characters, ChartDirector will also remove CDML fields in creating image maps. It is because CDML is only interpreted in ChartDirector, should not be useful outside of ChartDirector (such as in browser tool tips).

In some cases, you may not want ChartDirector to escape the special characters. For example, if the parameters have already been escaped before passing to ChartDirector, you may want to disable ChartDirector from escaping them again.

ChartDirector supports the following special fields to control the escape methods - " { escape_url } ", " { noescape_url } ", " { escape_html } ", " { noescape_html } ", " { escape_cdml } " and { noescape_cdml } ". These fields enable/disable the escape methods used in the template fields that follow them.

16.0.28 ChartDirector: Shape Specification

Plugin Version: 8.2, Platforms: macOS, Linux, Windows.

Answer: ChartDirector: Shape Specification
Notes: Several ChartDirector API accept shape specification as arguments. For example, BarLayer.setBarShape and BarLayer.setBarShape2 can be used to specify shapes of bars in bar charts, while DataSet.setDataSymbol, DataSet.setDataSymbol4, PolarLayer.setDataSymbol and PolarLayer.setDataSymbol4 can be used to specify shapes for data symbols.

Note that in addition to shapes, in many cases ChartDirector also accepts images or custom draw objects for data representation. For example, see DataSet.setDataSymbol2, DataSet.setDataSymbol3, PolarLayer.setDataSymbol2 and PolarLayer.setDataSymbol3.

Built-In Shapes

Built-in shapes are specified as integers. The integers can be explicit constants, or can be generated by a ChartDirector method for parameterized shapes. For example, a circle is represented by an explicit constant CircleShape (=7). On the other hand, the number representing a polygon depends on the number of sides the polygon has, so it is generated by using the PolygonShape method, passing in the number of sides as argument.

The following table illustrates the various ChartDirector shapes:

Custom Shapes

In ChartDirector, custom shapes are specified as an array of integers x0, y0, x1, y1, x2, y2 ... representing the coordinates of the vertices of the custom polygonal shape.

The polygon should be defined with a bounding square of 1000 x 1000 units, in which the x-axis is from -500 to 500 going from left to right, and the y-axis is from 0 to 1000 going from bottom to top.

ChartDirector will automatically scale the polygon so that 1000 units will become to the pixel size as requested by the various ChartDirector API.

As an example, the shape of the standard diamond shape in ChartDirector is represented as an array with 8 numbers:

0, 0, 500, 500, 0, 1000, -500, 500

16.0.29 Copy styled text?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to quickly copy styled text from one textarea to another?
Example:

```
#if TargetWin32 then
TextArea1.WinRTFDataMBS = TextArea2.WinRTFDataMBS
#elseif TargetMacOS then
TextArea1.NSTextViewMBS.textStorage.setAttributedString TextArea2.NSTextViewMBS.textStorage
#else
TextArea1.StyledText = TextArea2.StyledText
#endif
```

Notes: The code above uses special plugin functions on Mac and Windows and falls back to framework for Linux.

16.0.30 Do you have code to validate a credit card number?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can check the checksum to tell if a credit card number is not valid.
Example:

```
Dim strNumber As String
Dim nLength as Integer
Dim nValue as Integer
Dim nChecksum as Integer
Dim nIndex as Integer

strNumber = EditField1.Text
nLength = Len(strNumber)
nChecksum = 0

For nIndex = 0 To nLength - 2
nValue = Val(Mid(strNumber, nLength - (nIndex + 1), 1)) * (2 - (nIndex Mod 2))
If nValue <10 Then
nChecksum = nChecksum + nValue
Else
nChecksum = nChecksum + (nValue - 9)
End If
Next

If Val(Mid(strNumber, Len(strNumber), 1)) = (10 - (nChecksum Mod 10)) Mod 10 Then
MsgBox("The credit card number looks valid")
Else
MsgBox("The credit card number is invalid")
End IF
```

Notes: Here's some code that will validate the checksum for a credit card. It works for Visa, MasterCard, American Express and Discover. Not sure about others, but I imagine they use the same basic algorithm. Of course, this doesn't actually mean that the credit card is valid, it's only useful for helping the user catch typos.

The above code doesn't have any error checking and it expects that the credit card number will be entered without spaces, dashes or any other non-numeric characters. Addressing those issues will be an exercise left to the reader. :)

(From Mike Stefanik)

16.0.31 Do you have plugins for X-Rite EyeOne, eXact or i1Pro?

Plugin Version: all.

Answer: Our EyeOne plugin is available on request for licensees of the X-Rite SDKs.
Notes: Please first go to X-Rite and get a SDK license.
Than we can talk about the plugin.

16.0.32 Does SQL Plugin handle stored procedures with multiple result sets?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Yes, the plugin can work with multiple recordsets.
Notes: You need to use SQLCommandMBS class. When you get back results, you use FetchNext to walk over all records in the first result set. Than you simply start again with FetchNext to get the second record set.
Even the RecordSet functions should work, just use them twice to get all records from both record sets.

16.0.33 Does the plugin home home?

Plugin Version: all, Platform: macOS.

Answer: Yes, we like to know who is using the plugin, so the plugin may contact our server.
Example:

none.

Notes: Please note that this does not affect your users as the plugin will only do this in the IDE and the relevant plugin part is never included in your applications.

The plugin if used for some hours, does contact our server to provide statistical data about Xojo version and OS versions. This way we know what versions are used. We can return the version number of the current plugin which may be visible in future versions somehow. And we transmit partial licenses data so we can track use of illegal license keys.

If you do not like to have this, you can block Xojo IDE from contacting our website via your Firewall.
Blocking the transfer will not disable the plugin or change the features.
Or contact us for a plugin version which explicitly does not contain this feature.

16.0.34 folderitem.absolutepath is limited to 255 chars. How can I get longer ones?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Paths on a Mac are not unique, so use them only to display them to the user.
Example:

```
Function AbsolutePath(f as FolderItem) As String
Dim s as string
Dim nf as FolderItem
nf = f
s = ""
while nf<>nil
s = nf.name + ":" + s
nf = nf.parent
wend
Return s
End Function
```

16.0.35 Has anyone played round with using CoreImage to do things like add dissolve transitions say when changing from one tab to another within a window?

Platform: macOS.

Answer: This code implements animations for a tabpanel change:
Example:

```
// in a tabpanel.change event:

dim r as CGSTransitionRequestMBS
dim co as new CGSConnectionMBS
dim cw as CGSWindowMBS
dim ct as CGSTransitionMBS
static OldTab as Integer

cw=co.CGSWindow(window1)
If cw = Nil Then
return // 10.3...
End If
r=new CGSTransitionRequestMBS
r.TransitionType=r.CGSFlip
r.HasBackGround=false
r.HasBackColor=false
r.Win=cw
```

```
// watch the value of the clicked tab versus the last tab
if tabpanel1.Value=0 or tabpanel1.Value <OldTab then
r.TransitionOption=r.CGSLeft
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
else
r.TransitionOption=r.CGSRight
ct=co.NewTransition(r)
if ct<>Nil then
Refresh
ct.Invoke(1)
ct.Wait(1)
ct.Release
else
MsgBox "Error creating the transition."
end if
end if
// Keep track of the last tab clicked
OldTab = tabpanel1.Value
```

Notes: See CGS* classes for more details.

16.0.36 How about Plugin support for older OS X?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We support in general Mac OS X 10.5 and newer.
Notes: All the 64-bit plugins on Mac require OS X 10.7.
Intel 32-bit plugins on Mac require OS X 10.5 or newer.

Currently the ChartDirector 6, GraphicsMagick and GameKit plugins requires Mac OS X 10.6.
Also for SQL Plugin the built in SQLite library requires 10.6.

16.0.37 How can I detect whether an Intel CPU is a 64bit CPU?

Plugin Version: all.

Answer: Look on the CPU family returned by sysctl:
Example:

```
Function is64bit() As Boolean

#if TargetLittleEndian

dim m as MemoryBlock = NewMemoryBlock(8)
dim family as Integer
dim s as string

m=SystemControlNameToMIBMBS("hw.cpufamily")
m=SystemControlMBS(m)

if m<>nil then
m.LittleEndian=True
family=m.Long(0)

const CPUFAMILY_INTEL_6_14 = &h73d67300 //* "Intel Core Solo" and "Intel Core Duo" (32-bit Pentium-M with SSE3) */
const CPUFAMILY_INTEL_6_15 = &h426f69ef //* "Intel Core 2 Duo" */
const CPUFAMILY_INTEL_6_23 = &h78ea4fbc //* Penryn */
const CPUFAMILY_INTEL_6_26 = &h6b5a4cd2 //* Nehalem */

Select case family
case CPUFAMILY_INTEL_6_14
Return false
case CPUFAMILY_INTEL_6_15
Return true
case CPUFAMILY_INTEL_6_23
Return true
case CPUFAMILY_INTEL_6_26
Return true
// newer CPUs may be missing here
end Select

end if

#endif

Return false

Exception
Return false
End Function
```

Notes: This code is written for Mac OS X where you only have a limited number of possible CPUs.

16.0.38 How can I disable the close box of a window on Windows?

Plugin Version: all, Platform: Windows.

Answer: The following code will remove the close item from the system menu of the window.
Example:

```
#if TargetWin32 then
Declare Function GetSystemMenu Lib "user32" (hwnd as Integer, bRevert as Integer) as Integer
Declare Function RemoveMenu Lib "user32" (hMenu as Integer, nPosition as Integer, wFlags as Integer) as
Integer
Dim hSysMenu as Integer
hSysMenu = GetSystemMenu(me.WinHWND, 0)
RemoveMenu hSysMenu, &HF060, &H0
#endif
```

Notes: The window may not be updated directly.

16.0.39 How can I get all the environment variables from Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetWin32
declare function GetEnvironmentStrings Lib "kernel32" () as ptr
dim m as memoryBlock
dim n as Integer

m=GetEnvironmentStrings()

n=0
do
msgBox m.cstring(n)
while m.byte(n)<>0
n=n+1
wend
n=n+1
```

```
loop until m.byte(n)=0
#endif
```

Notes: The MBS Plugin has an EnvironmentMBS class for this.

16.0.40 How can i get similar behavior to Roxio Toast or iTunes where clicking a 'burn' button allows the next inserted blank CD-R to bypass the Finder and be accepted by my application?

Plugin Version: all, Platform: macOS.

Answer: You need to get a media reservation.
Example:

```
dim d as DRDeviceMBS // get a device
d.AcquireMediaReservation
```

Notes: Use the plugin function AcquireMediaReservation and later release it using ReleaseMediaReservation.
See plugin examples on how to use it and check Apples DiscRecording framework documentation for more details.

16.0.41 How can I get text from a PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Crossplatform you can use DynaPDF Pro.
Notes: On Mac OS X you can also use PDFKit for the same job.
While DynaPDF Pro gives you each bit of text with rotation, font information and encoding details, PDFKit gives you only the text string for a PDF page.

16.0.42 How can I get text from a Word Document?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: to get the text string from a doc file, use the NSAttributedStringMBS class.
Notes: The NSAttributedStringMBS class is Mac OS X only and we have currently no solution for Windows or Linux.

Use the NSAttributedStringMBS.initWithDocFormat(data as string) as boolean method.

16.0.43 How can I get the item string for a given file creator?

Plugin Version: all.

Answer: Try this function:
Example:

```
Sub pullNativeDocs(aCREA As string)
Dim result as Integer
Dim m, k as memoryBlock
Dim f as folderItem
Dim newType as string
Dim anIcon As picture
Dim ofs as Integer

Declare Function GetFileTypesThatAppCanNativelyOpen Lib "Carbon" (appVRefNumHint as Short, appSignature as OSType, nativeTypes as Ptr) as Short Inline68K("701CABFC")
Declare Function GetDocumentKindString Lib "Carbon" (docVRefNum as Short, docType as OSType, docCreator as OSType, kindString as ptr) as Short Inline68K("7016ABFC")

listBox1.deleteAllRows

m = newMemoryBlock(1024)
result = GetFileTypesThatAppCanNativelyOpen(Volume(0).MacVRefNum, aCREA, m)
if result <>0 then
listBox1.addRow "<Not found.>"
return
end if

do
if m.byte(ofs*4) = 0 then
exit
else
newType = m.OSTypeMBS(ofs*4)
listBox1.addRow newType
k = newMemoryBlock(64)
result = GetDocumentKindString(Volume(0).MacVRefNum, newType, aCREA, k)
if result = 0 then
listBox1.cell(ofs,1) = k.pString(0)
ofs = ofs + 1
else
listBox1.cell(ofs,1) = "(unknown)"
end if

end if
```

```
loop

End Sub
```

Notes: Change ”Translation” to ”CarbonLib” for Mac OS X.

16.0.44 How can I launch an app using it’s creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent ”odoc” with the creator code to the Finder (”MACS”):
Example:

```
Function LaunchByCreator(C As String) As Boolean
Dim A As AppleEvent
A = NewAppleEvent(”aevt”,”odoc”,”MACS”)
A.ObjectSpecifierParam(”—-”) = GetUniqueIDObjectDescriptor(”appf”,nil,C)
return A.Send
End Function
```

16.0.45 How can I learn what shared libraries are required by a plugin on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please use the ldd command in the terminal.
Notes: You build an app on any platform, but for Linux.
For the resulting .so files in the libs folder, you can run the ldd command with the library path as parameter. It shows you references lib files and you can make sure you have those installed.

This is a sample run of our graphicsmagick plugin:

```
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$ ldd libMBSGraphicsMagickPlugin17744.so
linux-gate.so.1 =>(0xb76ee000)
libdl.so.2 =>/lib/i386-linux-gnu/libdl.so.2 (0xb6f0e000)
libgtk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgtk-x11-2.0.so.0 (0xb6aa6000)
libpthread.so.0 =>/lib/i386-linux-gnu/libpthread.so.0 (0xb6a8a000)
libstdc++.so.6 =>/usr/lib/i386-linux-gnu/libstdc++.so.6 (0xb69a5000)
libm.so.6 =>/lib/i386-linux-gnu/libm.so.6 (0xb6979000)
libgcc_s.so.1 =>/lib/i386-linux-gnu/libgcc_s.so.1 (0xb695b000)
libc.so.6 =>/lib/i386-linux-gnu/libc.so.6 (0xb67b1000)
```

```
/lib/ld-linux.so.2 (0xb76ef000)
libgdk-x11-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk-x11-2.0.so.0 (0xb6701000)
libpangocairo-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangocairo-1.0.so.0 (0xb66f4000)
libX11.so.6 =>/usr/lib/i386-linux-gnu/libX11.so.6 (0xb65c0000)
libXfixes.so.3 =>/usr/lib/i386-linux-gnu/libXfixes.so.3 (0xb65ba000)
libatk-1.0.so.0 =>/usr/lib/i386-linux-gnu/libatk-1.0.so.0 (0xb659a000)
libcairo.so.2 =>/usr/lib/i386-linux-gnu/libcairo.so.2 (0xb64ce000)
libgdk_pixbuf-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgdk_pixbuf-2.0.so.0 (0xb64ad000)
libgio-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgio-2.0.so.0 (0xb6356000)
libpangoft2-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpangoft2-1.0.so.0 (0xb632a000)
libpango-1.0.so.0 =>/usr/lib/i386-linux-gnu/libpango-1.0.so.0 (0xb62e0000)
libfontconfig.so.1 =>/usr/lib/i386-linux-gnu/libfontconfig.so.1 (0xb62ab000)
libgobject-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgobject-2.0.so.0 (0xb625c000)
libglib-2.0.so.0 =>/lib/i386-linux-gnu/libglib-2.0.so.0 (0xb6163000)
libXext.so.6 =>/usr/lib/i386-linux-gnu/libXext.so.6 (0xb6151000)
libXrender.so.1 =>/usr/lib/i386-linux-gnu/libXrender.so.1 (0xb6147000)
libXinerama.so.1 =>/usr/lib/i386-linux-gnu/libXinerama.so.1 (0xb6142000)
libXi.so.6 =>/usr/lib/i386-linux-gnu/libXi.so.6 (0xb6132000)
libXrandr.so.2 =>/usr/lib/i386-linux-gnu/libXrandr.so.2 (0xb6129000)
libXcursor.so.1 =>/usr/lib/i386-linux-gnu/libXcursor.so.1 (0xb611e000)
libXcomposite.so.1 =>/usr/lib/i386-linux-gnu/libXcomposite.so.1 (0xb611a000)
libXdamage.so.1 =>/usr/lib/i386-linux-gnu/libXdamage.so.1 (0xb6115000)
libfreetype.so.6 =>/usr/lib/i386-linux-gnu/libfreetype.so.6 (0xb607b000)
libxcb.so.1 =>/usr/lib/i386-linux-gnu/libxcb.so.1 (0xb605a000)
libpixman-1.so.0 =>/usr/lib/i386-linux-gnu/libpixman-1.so.0 (0xb5fc2000)
libpng12.so.0 =>/lib/i386-linux-gnu/libpng12.so.0 (0xb5f98000)
libxcb-shm.so.0 =>/usr/lib/i386-linux-gnu/libxcb-shm.so.0 (0xb5f93000)
libxcb-render.so.0 =>/usr/lib/i386-linux-gnu/libxcb-render.so.0 (0xb5f89000)
libz.so.1 =>/lib/i386-linux-gnu/libz.so.1 (0xb5f73000)
libgmodule-2.0.so.0 =>/usr/lib/i386-linux-gnu/libgmodule-2.0.so.0 (0xb5f6e000)
libselinux.so.1 =>/lib/i386-linux-gnu/libselinux.so.1 (0xb5f4f000)
libresolv.so.2 =>/lib/i386-linux-gnu/libresolv.so.2 (0xb5f36000)
libexpat.so.1 =>/lib/i386-linux-gnu/libexpat.so.1 (0xb5f0c000)
libffi.so.6 =>/usr/lib/i386-linux-gnu/libffi.so.6 (0xb5f05000)
libpcre.so.3 =>/lib/i386-linux-gnu/libpcre.so.3 (0xb5ec9000)
librt.so.1 =>/lib/i386-linux-gnu/librt.so.1 (0xb5ec0000)
libXau.so.6 =>/usr/lib/i386-linux-gnu/libXau.so.6 (0xb5ebb000)
libXdmcp.so.6 =>/usr/lib/i386-linux-gnu/libXdmcp.so.6 (0xb5eb4000)
cs@Ubuntu32:
textasciitilde /MeinProgramm/MeinProgramm Libs$
```

As you see all library have been found and their load address is printed behind the na,e.
If a library is missing, you usually see the address missing there or being zero.

16.0.46 How can I validate an email address?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
Dim re As RegEx
re = New RegEx
Dim rm As RegExMatch

re.SearchPattern = " [ a-z0-9!#$ %&'*+/=?^_' { | }
textasciitilde - ] +(?:\. [ a-z0-9!#$ %&'*+/=?^_' { | }
textasciitilde - ] +)*@(?: [ a-z0-9 ] (?: [ a-z0-9- ] * [ a-z0-9 ] )?\.)+ [ a-z0-9 ] (?: [ a-z0-9- ] * [ a-z0-9 ] )?"
rm = re.Search(editField1.Text)

if rm = Nil Then
StaticText2.text = editField1.Text + " not valid email"
Else
StaticText2.Text = editField1.Text + " is valid"
End if
```

Notes: Adapted from:
http://www.regular-expressions.info/email.html

16.0.47 How do I decode correctly an email subject?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The following code can be used to decode an email subject including several encodings including Base 64.
Example:

```
dim src as string // input

dim theRegex as Regex
dim theRegexMatch as RegexMatch
dim result, infoCharset, encodedPart as string
dim theStart as Integer

if instr(src, "=?") >0 then
theRegex = new Regex
theRegex.Options.Greedy = false
theRegex.searchPattern = "(.*)=\?(.+)\?(Q | B)\?(.+)\?="
theRegexMatch = theRegex.search(src)
```

```
while theRegexMatch <>nil
theStart = theRegexMatch.subExpressionStartB(0) + len(theRegexMatch.subExpressionString(0))

result = result + theRegexMatch.subExpressionString(1)
infoCharset = theRegexMatch.subExpressionString(2)
encodedPart = theRegexMatch.subExpressionString(4)
if theRegexMatch.subExpressionString(3) = "B" then
encodedPart = DecodeBase64(encodedPart)
elseif theRegexMatch.subExpressionString(3) = "Q" then
encodedPart = DecodeQuotedPrintable(encodedPart)
end if
if right(result, 1) = " " then
result = mid(result, 1, len(result)-1)
end if
encodedPart = encodedPart.DefineEncoding(GetInternetTextEncoding(infoCharset))
result = result + encodedPart

theRegex.SearchStartPosition = theStart
theRegexMatch = theRegex.search()
wend

result = result + mid(src, theStart+1)

else
result = src
end if
// theRegexMatch = theRegex.search

msgbox result
```

Notes: May not look nice depending on the controls used.
This is no longer needed when using MimeEmailMBS class which decodes for you.

16.0.48 How do I enable/disable a single tab in a tabpanel?

Plugin Version: all, Platform: macOS.

Answer: Use the TabpanelEnabledMBS method.
Example:

```
TabpanelEnabledMBS(tabpanel1, 1, false)
```

Notes: Use Carbon for MachO and CarbonLib for Mac Carbon and AppearanceLib for Mac OS Classic as

library.
For Cocoa, please use enabled property of NSTabViewItemMBS class.

16.0.49 How do I find the root volume for a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Function GetRootVolume(f as FolderItem) as FolderItem
dim root, dum as folderItem
if f <>nil then
root = f // f might be the volume
do
dum = root.parent
if dum <>nil then
root = dum
end if
loop until dum = nil
return root
end if
End Function
```

16.0.50 How do I get the current languages list?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim p as new CFPreferencesMBS
dim a as CFArrayMBS
dim s as CFStringMBS
dim o as CFObjectMBS
dim sa(-1) as string

o=p.CopyAppValue("AppleLanguages",".GlobalPreferences")

if o<>Nil then
a=CFArrayMBS(o)

dim i,c as Integer
```

```
c=a.Count-1
for i=0 to c
o=a.Item(i)

if o isa CFStringMBS then
s=CFStringMBS(o)
sa.Append s.str
end if
next
end if

MsgBox Join(sa,EndOfLine)
```

Notes: On Mac OS X you can get the list of current languages like this list:

```
de
en
ja
fr
es
it
pt
pt-PT
nl
sv
nb
da
fi
ru
pl
zh-Hans
zh-Hant
ko
```

Which has German (de) on the top for a German user.
This code has been tested on Mac OS X 10.5 only.

16.0.51 How do I get the Mac OS Version?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim i as Integer
if system.gestalt("sysv", i) then
//do this in an 'If' in case you don't get any value back at all and system.gestalt returns boolean
if i = &h750 then //If OS is 7.5
//do stuff
elseif i = &h761 then //If OS is 7.6.1
//do stuff
end if
end if
```

Notes: The MBS Plugin has a function SystemInformationMBS.OSVersionString for this.

16.0.52 How do I get the printer name?

Plugin Version: all.

Answer: For Mac OS Classic see the code below and for Mac OS X use the Carbon Print Manager Classes from the MBS Plugin.
Example:

```
dim s as String
dim i as Integer

s=app.ResourceFork.GetResource("STR ",-8192)
if s<>"" then
i=ascb(leftb(s,1))
s=mid(s,2,i)

MsgBox s
end if
```

Notes: A note from Craig Hoyt:

After looking at your example I had a little deja-vu experience. Several years ago I played around with this same code if FutureBasic. I discovered that it did not and still doesn't provide the 'Printer Name', it does return the print driver name. If it returns 'LaserWriter 8' as the print driver you can look into this file and get the 'PAPA' resource #-8192 to get the actual Printer Name. Unfortunately this does not hold true for other printers. My Epson and HP Printers (the Epson has an Ethernet Card and the HP is USB) do not provide this info in their drivers. As far as I can tell it only returns the name by polling the printer itself.

16.0.53 How do I make a metal window if RB does not allow me this?

Plugin Version: all, Platform: macOS.

Answer: The following declare turns any window on Mac OS X 10.2 or newer into a metal one.
Example:

```
declare sub ChangeWindowAttributes lib "Carbon" (win as windowptr, a as Integer, b as Integer)

ChangeWindowAttributes window1,256,0
```

Notes: May not look nice depending on the controls used.

16.0.54 How do I make a smooth color transition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I'd like to show in a report some bars, which start with color A
and end with color B.

The color change should be very smooth.

My problem: If I would start from 255,0,0 and end by 0,0,0, I would have
255 different colors. If the bars are longer than 255 pixels, would
this look nice?
Example:

```
// Window.Paint:
Sub Paint(g As Graphics)
dim w,w1,x,p as Integer
dim c1,c2,c as color
dim p1,p2 as Double

c1=rgb(255,0,0) // start color
c2=rgb(0,255,0) // end color

w=g.Width
w1=w-1

for x=0 to w1
p1=x/w1
p2=1.0-p1
```

```
c=rgb(c1.red*p1+c2.red*p2, c1.green*p1+c2.green*p2, c1.blue*p1+c2.blue*p2)

g.ForeColor=c
g.DrawLine x,0,x,g.Height

next
End Sub
```

Notes:

Try the code above in a window paint event handler.

16.0.55 How do I read the applications in the dock app?

Plugin Version: all, Platform: macOS.

Answer: Use CFPreferencesMBS class like in this example:
Example:

```
// Reads file names from persistent dock applications and puts them into the list

dim pref as new CFPreferencesMBS

dim persistentapps as CFStringMBS = NewCFStringMBS("persistent-apps")
dim ApplicationID as CFStringMBS = NewCFStringMBS("com.apple.dock")
dim tiledata as CFStringMBS = NewCFStringMBS("tile-data")
dim filelabel as CFStringMBS = NewCFStringMBS("file-label")

// get the array of persistent applications from dock preferences
dim o as CFObjectMBS = pref.CopyValue(persistentapps, ApplicationID, pref.kCFPreferencesCurrentUser,
pref.kCFPreferencesAnyHost)

if o isa CFArrayMBS then
dim a as CFArrayMBS = CFArrayMBS(o)

// walk over all items in array
dim c as Integer = a.Count-1
for i as Integer = 0 to c

// get dictionary describing item
o = a.Item(i)

if o isa CFDictionaryMBS then
dim d as CFDictionaryMBS = CFDictionaryMBS(o)
```

```
// and pick tile data dictionary
o = d.Value(tiledata)
if o isa CFDictionaryMBS then
d = CFDictionaryMBS(o)

// and pick there the file label
o = d.Value(filelabel)
if o isa CFStringMBS then
// and display it
dim name as string = CFStringMBS(o).str
List.AddRow name
end if
end if
end if

next

else
MsgBox "Failed to read dock preferences."
end if
```

Notes: You can use the CFPreferencesMBS.SetValue to change a value and CFPreferencesMBS.Synchronize to write the values to disc. You may need to restart the Dock.app if you modified things.

16.0.56 How do I truncate a file?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In a binarystream you can set the length property to truncate.

16.0.57 How do update a Finder's windows after changing some files?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim f as folderitem // some file
dim ae as appleevent
ae=newappleevent("fndr","fupd","MACS")
ae.folderitemparam("—-")=f
if not ae.send then
//something went wrong
```

```
end if
```

Notes: The folderitem.finderupdate from the MBS Plugin does something like this.

16.0.58 How to access a USB device directly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: First, it depends on the device.
Notes: Some devices can be talked directly from user mode code, but some require a kernel driver.

For some devices you can use plugins to access them like:

- Audio and Video sources using the QTGrabberClassMBS
- Mass storage devices using the folderitem class.
- Serial devices using the System.SerialPort function.
- HID USB devices can be used with MacHIDMBS, WinHIDMBS or LinuxHIDInterface class.
- Any USB device may be used with MacUSBMBS or WinUSBMBS classes.

In general it is always the best to take the most high level access to have others do the work for the details.

16.0.59 How to add icon to file on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use FolderItem.AddCustomIcon or NSWorkspaceMBS.setIcon functions.
Notes: Please close any open stream for the file you want to add an icon.

16.0.60 How to ask the Mac for the Name of the Machine?

Plugin Version: all, Platform: macOS.

Answer: Using Apple Events you can use this code:
Example:

```
Function Computername() As string
```

```
dim theEvent as AppleEvent
dim err as boolean

theEvent = newAppleEvent("mchn","getd","MACS")

err = theEvent.send

return theevent.ReplyString

End Function
```

Notes: Code above is for Mac OS 9!
Also the MBS Plugin has a function for this which may be faster and work also on Macs without Filesharing (which handles this event).

16.0.61 How to automatically enable retina in my apps?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSHighResolutionCapable"" YES")
```

Notes: This will set the NSHighResolutionCapable flag to YES.

16.0.62 How to avoid leaks with Cocoa functions?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
// in a Timer Action event:
Sub Action()
static LastPool as NSAutoreleasePoolMBS = nil
static CurrentPool as NSAutoreleasePoolMBS = nil

LastPool = CurrentPool
CurrentPool = new NSAutoreleasePoolMBS
```

```
End Sub
```

Notes: With Xojo 2009r4 the code above should not be needed as Xojo runtime does automatically handle the NSAutoreleasePools for you. For older Xojo versions you need to use code with a timer with the action event above to avoid memory leaks.

Please do not use Xojo 2009r4 and newer with plugins before version 9.5. You can get crashes there which typically show a line with a objc_msgSend call.

16.0.63 How to avoid trouble connecting to oracle database with SQL Plugin?

Plugin Version: all, Platform: macOS.

Answer: For oracle the most important thing is to point the plugin to the libraries from oracle.
Notes: In environment variables, the paths like ORACLE_HOME must be defined.
On Mac OS X you also need to define DYLD_LIBRARY_PATH to point to the dylib files from oracle.

For that you need to modify /etc/launchd.conf for Mac OS X 10.8 and newer.
In older versions those variables in .MacOSX/environment.plist file in user's home.

Another way for the case you bundle things inside your app is to use the LSEnvironment key in info.plist.
In info.plist it looks like this:

```
<key>LSEnvironment</key>
<dict>
<key>test</key>
<string>Hello World</string>
</dict>
```

16.0.64 How to avoid ___NSAutoreleaseNoPool console messages in threads?

Plugin Version: all, Platform: macOS.

Answer: You need to use your own NSAutoreleasePool on a thread like this:
Example:

```
sub MyThread.run
dim pool as new NSAutoreleasePoolMBS
// do work here

pool=nil
```

```
end sub
```

Notes: For more details read here:
http://developer.apple.com/mac/library/documentation/Cocoa/Reference/Foundation/Classes/NSAutoreleasePool_Class/Reference/Reference.html

16.0.65 How to bring app to front?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use this code:
Example:

```
// First way:
app.FrontMostMBS = true

// second way:
dim p as new ProcessMBS
p.GetCurrentProcess
p.FrontProcess = true

// third way:
NSApplicationMBS.sharedApplication.activateIgnoringOtherApps(true)

// for Windows:
RemoteControlMBS.WinBringWindowToTop
```

Notes: This will bring a Mac app to the front layer.

16.0.66 How to bring my application to front?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:
Example:

```
Dim A As AppleEvent
A = NewAppleEvent("misc","actv","")
If Not A.Send then
Beep
end if
```

Notes: (Code is Mac only)

16.0.67 How to catch Control-C on Mac or Linux in a console app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use SignalHandlerMBS class for this.
Example:

```
// watch for Control-C on Mac
call SignalHandlerMBS.SetFlagHandler(2)

dim ende as boolean = false
do
if SignalHandlerMBS.IsFlagSet(2) then
Print "Flag 2 set. Existing..."
ende = true
end if

DoEvents 1
loop until ende
```

Notes: The signal is catched, a flag is set and you can ask later in your normal application flow for the result.

16.0.68 How to change name of application menu?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use this code to change the application menu name on Mac OS X:
Example:

```
dim mb as new MenubarMBS
dim m as MenuMBS = mb.item(1) // 1 is in my tests the app menu
if m<>Nil then
m.MenuTitle = "Hello World"
end if
```

Notes: This code is for Carbon only.

16.0.69 How to change the name in the menubar of my app on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer:

You mean it screws up if the file name of the bundle itself is different than the name of the executable file in the MacOS folder within the bundle? If so, you should find something like this within your Info.plist file (or the 'plst' resource that the RB IDE builds for you):

<key>CFBundleExecutable</key>
<string>Executable file name here</string>

Just make sure that file name matches.

However, if your question involves how you can change the name of the app that appears in the menu and the dock, that's different. You can make this name different from the file name by changing the CFBundleName key:

<key>CFBundleName</key>
<string>Name for menu here</string>

Note that if you use my free AppBundler program, this second part is taken care of for you – just fill in a custom name in the right field. You can find AppBundler (from Thomas Reed) at http://www.bitjuggler.com/products/appbundler/ .

16.0.70 How to check if a folder/directory has subfolders?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this to check all items in a folder:
Example:

```
Function HasSubFolder(folder as FolderItem) As Boolean
dim c as Integer = folder.Count

for i as Integer = 1 to c
dim item as FolderItem = folder.TrueItem(i)

if item<>Nil and item.Directory then
Return true
end if
```

```
next

End Function
```

Notes: We use trueitem() here to avoid resolving alias/link files.
Also we check for nil as we may not have permission to see all items.
And if one is a directory, we return without checking the rest.

16.0.71 How to check if Macbook runs on battery or AC power?

Plugin Version: all, Platform: macOS.

Answer: Please use our IOPowerSourcesMBS class like this:
Example:

```
Function PowerSourceState() as Integer
dim p as new IOPowerSourcesMBS

// check all power sources
dim u as Integer = p.Count-1
for i as Integer = 0 to u
dim d as CFDictionaryMBS = p.Item(i)
if d<>nil then
// check if they have a power source state key:
dim o as CFObjectMBS = d.Value(NewCFStringMBS("Power Source State"))
if o isa CFStringMBS then
dim s as string = CFStringMBS(o).str

'MsgBox s

if s = "AC Power" then
Return 1
elseif s = "Battery Power" then
Return 2
end if
end if
end if
next
Return 0 // unknown
End Function
```

Notes: If you want to check the CFDictionaryMBS content, simply use a line like "dim x as dictionary = d.dictionary" and check the contents in the debugger.

16.0.72 How to check if Microsoft Outlook is installed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you need Outlook for Scripting, you should simply check registry for the required Outlook.Application class:
Example:

```
Function OutlookInstalled() As Boolean
#if TargetWin32 then

try
dim r as new RegistryItem("HKEY_CLASSES_ROOT\Outlook.Application\CLSID", false)

Return true

catch r as RegistryAccessErrorException
// not installed
Return false

end try

#else

// Windows only, so false on other platforms
Return false

#endif

End Function
```

16.0.73 How to check on Mac OS which country or language is currently selected?

Plugin Version: all, Platform: macOS.

Answer: The code below returns a country value.
Example:

```
dim result as Integer

IF TargetMacOS THEN
```

```
CONST smScriptLang = 28
CONST smSystemScript = -1

DECLARE FUNCTION GetScriptManagerVariable LIB "Carbon" ( selector as Integer) as Integer
DECLARE FUNCTION GetScriptVariable LIB "Carbon" ( script as Integer, selector as Integer) as Integer

result=GetScriptVariable(smSystemScript, smScriptLang)

END IF
```

Notes: Returns values like:

For more values, check "Script.h" in the frameworks.

16.0.74 How to code sign my app with plugins?

Plugin Version: all, Platform: macOS.

Answer: When you try to code sign the application with plugin dylibs on Mac OS X, you may see error message that there is actually a signature included.
Notes: Please use the -f command line parameter with codesign utility to overwrite our MBS signature.
We sign our plugins for MacOS, iOS and Windows to make sure they have not been modified.

In terminal, you do like this:

cd <Path to folder of app>

xattr -cr <Appname>.app
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.dylib
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app/Contents/Frameworks/*.framework
codesign -f -s "Developer ID Application: <Your Name>" <Appname>.app

Please use the name of your certificate (See keychain), the name of your app and the path to the app folder.
If you have helper apps you need to sign them first.
You can use a build step to automatically sign your app on build.

16.0.75 How to collapse a window?

Plugin Version: all, Platform: macOS.

Answer: Use this function (Mac only):
Example:

```
Sub CollapseRBwindow(w as window, CollapseStatus as boolean)
dim state, err as Integer
dim wh as MemoryBlock

Declare Function CollapseWindow Lib "Carbon" (window as Integer,collapse as Integer) as Integer

IF CollapseStatus THEN
state = 1
ELSE
state = 0
END IF

err = CollapseWindow(w.MacWindowPtr, state)

End Sub
```

Notes: Also the MBS Plugin has a window.collapsedmbs property you can set.
For Windows the MBS Plugin has a window.isiconicmbs property.

16.0.76 How to compare two pictures?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
Function ComparePictures(p as picture,q as picture) as Integer
dim r,u as RGBSurface
dim x,y,n,m,h,w as Integer
dim w1,w2,h1,h2,d1,d2 as Integer
dim c1,c2 as color

h1=p.Height
h2=q.Height
w1=p.Width
w2=q.Width
d1=p.Depth
d2=q.Depth

if d1<>d2 then
Return 1
elseif w1<>w2 then
```

```
return 2
elseif h1<>h2 then
Return 3
else
r=p.RGBSurface
u=q.RGBSurface

if r=nil or u=nil then
Return -1
else
h=h1-1
w=w1-1
m=min(w,h)

for n=0 to m
c1=r.Pixel(n,n)
c2=u.Pixel(n,n)
if c1<>c2 then
Return 4
end if
next

for y=0 to h
for x=0 to w
c1=r.Pixel(x,y)
c2=u.Pixel(x,y)
if c1<>c2 then
Return 5
end if
next
next

// 0 for equal
// -1 for error (no RGBsurface)
// 1 for different depth
// 2 for different width
// 3 for different height
// 4 for different pixels (fast test)
// 5 for different pixels (slow test)
end if
end if

Exception
Return -1
End Function
```

Notes: Remember that this only works on bitmap pictures, so the picture.BitmapMBS function may be useful.

16.0.77 How to compile PHP library?

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.
Notes: This instructions were written based on PHP 5.2.6 on Mac OS X:

- Best take a new Mac with current Xcode version installed.
- Download the source code archive. e.g. "php-5.2.6.tar.bz2"
- Expand that archive on your harddisc.
- Open terminal window
- change directory to the php directory. e.g. "cd /php-5.2.6"
- execute this two lines to define the supported CPU types and the minimum Mac OS X version:
- export CFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- export CXXFLAGS="-arch ppc -arch i386 -mmacosx-version-min=10.3"
- the command "./configure help" does show the configure options.
- use configure with a line like this:
- ./configure –enable-embed –with-curl -enable-ftp –enable-zip –enable-sockets –enable-static –enable-soap –with-zlib –with-bz2 –enable-exif –enable-bcmath –enable-calendar
- start the compilation with "make all"
- other option is to use "make install" which first does the same as "make all" and than does some installation scripts.
- you may get an error about a duplicate symbole __yytext. Search the file "zend_ini_scanner.c", search a line with "char *yytext;" and change it to "extern char *yytext;".
- On the end you get a lot of error messages, but you have a working library (named libphp5.so) file in the invisible ".libs" folder inside your php source folder.

Possible problems and solutions:

- If the path to your files has spaces, you can get into trouble. e.g. "/RB Plugins/PHP" is bad as files will be searched sometimes in "/RB".

- If you have in /usr/local/lib libraries which conflict with the default libraries, you can get into trouble.
- If you installed some open source tools which compiled their own libraries, you can get into conflicts.
- if you have to reconfigure or after a problem, you may need to use ”make clean” before you start ”make all” again.

Feel free to install additional libraries and add more packages to the configure line.

16.0.78 How to convert a BrowserType to a String with WebSession.Browser?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetBrowserName(s as WebSession.BrowserType) As string
Select case s
case WebSession.BrowserType.Android
Return ”Andriod”
case WebSession.BrowserType.Blackberry
Return ”Blackberry”
case WebSession.BrowserType.Chrome
Return ”Chrome”
case WebSession.BrowserType.ChromeOS
Return ”ChromeOS”
case WebSession.BrowserType.Firefox
Return ”Firefox”
case WebSession.BrowserType.InternetExplorer
Return ”InternetExplorer”
case WebSession.BrowserType.Opera
Return ”Opera”
case WebSession.BrowserType.Safari
Return ”Safari”
case WebSession.BrowserType.SafariMobile
Return ”SafariMobile”
case WebSession.BrowserType.Unknown
Return ”Unknown”
else
Return ”Unkown: ”+str(integer(s))
end Select

End Function
```

16.0.79 How to convert a EngineType to a String with WebSession.Engine?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetRenderingEngineName(s as WebSession.EngineType) As string
Select case s
case WebSession.EngineType.Gecko
Return "Gecko"
case WebSession.EngineType.Presto
Return "Presto"
case WebSession.EngineType.Trident
Return "Trident"
case WebSession.EngineType.Unknown
Return "Unknown"
case WebSession.EngineType.WebKit
Return "WebKit"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

16.0.80 How to convert a PlatformType to a String with WebSession.Platform?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this:
Example:

```
Function GetPlatformName(s as WebSession.PlatformType) As string
Select case s
case WebSession.PlatformType.Blackberry
Return "Blackberry"
case WebSession.PlatformType.iPad
Return "iPad"
case WebSession.PlatformType.iPhone
Return "iPhone"
case WebSession.PlatformType.iPodTouch
Return "iPodTouch"
case WebSession.PlatformType.Linux
Return "Linux"
case WebSession.PlatformType.Macintosh
Return "Macintosh"
```

```
case WebSession.PlatformType.PS3
Return "PS3"
case WebSession.PlatformType.Unknown
Return "Unknown"
case WebSession.PlatformType.WebOS
Return "WebOS"
case WebSession.PlatformType.Wii
Return "Wii"
case WebSession.PlatformType.Windows
Return "Windows"
else
Return "Unkown: "+str(integer(s))
end Select

End Function
```

16.0.81 How to convert a text to iso-8859-1 using the TextEncoder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough it's not perfect.
You need to set lc to the current color you use.
Example:

```
dim outstring as string
dim theMac, thePC as textencoding
dim Mac2PC as textconverter

theMac = getTextEncoding(0) // MacRoman
thePC = getTextEncoding(&h0201) // ISOLatin1

Mac2PC = getTextConverter(theMac, thePC)
// if you wanted to do the opposite just create a converter
// PC2Mac = getTextConverter(thePC, theMac)

outstring = Mac2PC.convert("Bj√rn, this text should be converted")
Mac2PC.clear
```

Notes:

You have to call Mac2PC.clear after every conversion to reset the encoding engine.
See also newer TextConverterMBS class.

16.0.82 How to convert ChartTime back to Xojo date?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have this example code:
Example:

```
Function ChartTimeToDate(ChartTime as Double) As date
static diff as Double = 0.0

if diff = 0.0 then
dim d2 as Double = CDBaseChartMBS.chartTime(2015, 1, 1)
dim da as new date(2015, 1, 1)
dim ts as Double = da.TotalSeconds

diff = ts - d2
end if

dim d as new date
d.TotalSeconds = diff + ChartTime

Return d
End Function
```

Notes: As you see we calculate the difference in base date from Date and ChartTime and later use difference to convert.

16.0.83 How to convert line endings in text files?

Plugin Version: all, Platform: macOS.

Answer: You can simply read file with TextInputStream and write with new line endings using TextOutputStream class.
Example:

```
dim inputfile as FolderItem = SpecialFolder.Desktop.Child("test.txt")
dim outputfile as FolderItem = SpecialFolder.Desktop.Child("output.txt")
dim it as TextInputStream = TextInputStream.Open(inputfile)
dim ot as TextOutputStream = TextOutputStream.Create(outputfile)

ot.Delimiter = EndOfLine.Windows // new line ending
while not it.EOF
ot.WriteLine it.ReadLine
wend
```

Notes: TextInputStream will read any input line endings and with delimiter property in TextOutputStream you can easily define your new delimiter.

16.0.84 How to convert picture to string and back?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use this plugin functions:
Notes: JPEG:

JPEGStringToPictureMBS(buf as string) as picture
JPEGStringToPictureMBS(buf as string,allowdamaged as Boolean) as picture
PictureToJPEGStringMBS(pic as picture,quality as Integer) as string

PNG:

PictureToPNGStringMBS(pic as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single) as string
PictureToPNGStringMBS(pic as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PictureToPNGStringMBS(pic as picture, mask as picture, gamma as single, Interlace as Boolean, FilterType as Integer) as string
PNGStringToPictureMBS(data as string, gamma as single) as picture
PNGStringToPNGPictureMBS(data as string, gamma as single) as PNGpictureMBS

Tiff:

TIFFStringToPictureMBS(data as string) as picture
TIFFStringToTiffPictureMBS(data as string) as TiffPictureMBS

BMP:

BMPStringtoPictureMBS(data as string) as picture
Picture.BMPDataMBS(ResolutionValueDPI as Integer=72) as string

GIF:

GifStringToGifMBS(data as string) as GIFMBS
GifStringToPictureMBS(data as string) as Picture

16.0.85 How to copy an array?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy an array:
Example:

```
Function CopyArray(a() as Double) as Double()
dim r() as Double
for each v as Double in a
r.Append v
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an array of objects, you need to change code to also make a copy of those objects.

16.0.86 How to copy an dictionary?

Plugin Version: all, Platform: macOS.

Answer: You can use a function like this to copy a dictionary:
Example:

```
Function CopyDictionary(d as Dictionary) As Dictionary
dim r as new Dictionary
for each key as Variant in d.keys
r.Value(key) = d.Value(key)
next
Return r
End Function
```

Notes: If needed make several copies of this method with different data types, not just double.
For a deep copy of an dictionary of objects, you need to change code to also make a copy of those objects.

16.0.87 How to copy parts of a movie to another one?

Plugin Version: all, Platforms: macOS, Windows.

Answer: The code below copies ten seconds of the snowman movie to the dummy movie starting at the 5th second.

Example:

```
dim f as FolderItem
dim md as EditableMovie
dim ms as EditableMovie

f=SpecialFolder.Desktop.Child("Our First Snowman.mov")
ms=f.OpenEditableMovie

ms.SelectionStartMBS=5
ms.SelectionLengthMBS=10

f=SpecialFolder.Desktop.Child("dummy.mov")
md=f.CreateMovie

msgbox str(md.AddMovieSelectionMBS(ms))
```

Notes: If result is not 0, the method fails.

16.0.88 How to create a birthday like calendar event?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
// start a connection to the calendar database
dim s as new CalCalendarStoreMBS

// needed for the error details
dim e as NSErrorMBS

dim r as CalRecurrenceRuleMBS = CalRecurrenceRuleMBS.initYearlyRecurrence(1, nil) // repeat every year without end

dim a as new CalAlarmMBS // add alarm
a.action = a.CalAlarmActionDisplay
a.relativeTrigger = -3600*24 // 24 Hours before

// create a new calendar
dim c as new CalEventMBS

dim d as new date(2011, 04, 20) // the date

dim calendars() as CalCalendarMBS = s.calendars
```

```
// set properties
c.Title="Test Birthday"
c.startDate=d
c.recurrenceRule = r
c.calendar=calendars(0) // add to first calendar
c.addAlarm(a)
c.endDate = d
c.isAllDay = true

// save event
call s.saveEvent(c,s.CalSpanAllEvents, e)
if e<>nil then
MsgBox e.localizedDescription
else
MsgBox "New event was created."
end if
```

Notes: This adds an event to iCal for the given date with alarm to remember you and repeats it every year.

16.0.89 How to create a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the UUIDMBS class for this.

16.0.90 How to create a Mac picture clip file?

Plugin Version: all, Platform: Windows.

Answer: You can use code like this one.
Example:

```
dim f As FolderItem
dim p As Picture

f=SpecialFolder.Desktop.Child("Test.pictClipping")
if f=nil then Return

p=new Picture(300,200,32) 'Make a sample picture
p.Graphics.ForeColor=RGB(0,255,255)
p.Graphics.FillOval 0,0,99,99
```

```
p.Graphics.ForeColor=RGB(255,0,0)
p.Graphics.DrawOval 0,0,99,99

dim r As ResourceFork 'ResourceFork is needed for a clip file

// Please define a file type Any
r=f.CreateResourceFork("Any")

// get PICT data using plugin function
dim pictdata as string = p.PicHandleDataMBS
r.AddResource(pictdata,"PICT",256,"Picture")

dim m as new MemoryBlock(8)

m.LittleEndian = false
m.Int16Value(0) = 0
m.Int16Value(2) = 0
m.Int16Value(4) = p.Width
m.Int16Value(6) = p.Height

r.AddResource(m,"RECT",256,"")

'Values taken from a sample file and irrelevant to the problem
dim data as string = DecodeBase64("AQAAAAAAAAAAAAAAAAACAFRDRVIAAAABAAAAAAAAAABUQ0lQAAAAA
r.AddResource(data,"drag",128,"") 'ditto
r.Close
```

Notes: In general Apple has deprecated this, but a few application still support clippings.

16.0.91 How to create a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check our DynaPDF plugin and the examples.
Notes: An alternative can be to use the CoreGraphics and Cocoa functions on Mac OS X.
For Windows, we can only suggest our DynaPDF plugin.

16.0.92 How to create EmailAttachment for PDF Data in memory?

Plugin Version: all, Platform: macOS.

Answer: You can use code like the one below:
Example:

```
Function EmailAttachmentFromPDFData(PDFData as string, filename as string) As EmailAttachment
dim a as new EmailAttachment

a.data = EncodeBase64(PDFData, 76)
a.ContentEncoding = "base64"
a.MIMEType = "application/pdf"
a.MacType = "PDF "
a.MacCreator = "prvw"
a.Name = filename

Return a
End Function
```

Notes: Compared to sample code from Xojo documentation, we set the mime type correct for PDF.
The MacType/MacCreator codes are deprecated, but you can still include them for older Mac email clients.
"prvw" is the creator code for Apple's preview app.

16.0.93 How to create PDF for image files?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use DynaPDF like this:
Example:

```
Function CreatePrintPDF(jpgFiles() as folderitem, pdfFile as FolderItem, PageWidth as Integer, PageHeight
as Integer) As Boolean
// have files?
If pdfFile = Nil Then Return False
If jpgFiles = Nil Then Return False

If jpgFiles.Ubound <0 Then Return False

// new DynaPDF
Dim pdf As New MyDynapdfMBS

// page width/height in MilliMeter
Dim pdfWidth as Integer = PageWidth * 72 / 25.4
Dim pdfHeight as Integer = PageHeight * 72 / 25.4

// put your license here
Call pdf.SetLicenseKey "Starter"

// create pdf
Call pdf.CreateNewPDF pdfFile
```

```
// set a couple of options
Call pdf.SetPageCoords(MyDynaPDFMBS.kpcTopDown)
Call pdf.SetResolution(300)
Call pdf.SetUseTransparency(False)
Call pdf.SetSaveNewImageFormat(False)
Call pdf.SetGStateFlags(MyDynaPDFMBS.kgfUseImageColorSpace, False)
Call pdf.SetJPEGQuality(100)

// set page size
Call pdf.SetBBox(MyDynaPDFMBS.kpbMediaBox, 0, 0, pdfWidth, pdfHeight)
Call pdf.SetPageWidth(pdfWidth)
Call pdf.SetPageHeight(pdfHeight)

// append pages with one image per page
For i as Integer = 0 To jpgFiles.Ubound
Call pdf.Append
Call pdf.InsertImageEx(0, 0, pdfWidth, pdfHeight, jpgFiles(i), 1)
Call pdf.EndPage
Next

// close
Call pdf.CloseFile

Return True
End Function
```

Notes: This is to join image files in paper size to a new PDF.
e.g. scans in A4 into an A4 PDF.

16.0.94 How to CURL Options translate to Plugin Calls?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a few tips on how to translate command line CURL calls to plugin calls.
Notes: curl -vX PUT http://localhost:5984/appserials/78569238475/DocumentRegister.docx?rev=3-25634563456 –data-binary @DocumentRegister.docx -H ”Content-Type: application/msword”

- The option -v means verbose. You can use OptionVerbose and listen for messages in the DebugMessage event.
- The option -X PUT means we want to do a HTTP PUT Request. So set OptionPut to true. Also you will want to set OptionUpload to true as you upload data.
- We have the URL which you put into OptionURL property.

- The –data-binary option tells CURL to pass the given data. With the @ before the data, it is intrepreted as a file name, so the data is read from the given file. You'll need to open this file and pass data with the Read event as needed. (See CURLS ftp file upload example project)
- The last option -H specifies an additional header for the upload. Pas this additional header with the SetOptionHTTPHeader method.

curl -X PUT http://127.0.0.1:5984/appserials/f2f4e540bf8bb60f61cfcd4328001c59 -d ' { "type":"Product","description":"Application Serial","acronym":"AppSerial","dateAdded":"2011-03-21 14:57:36" } '

- Option -X PUT like above.
- Pass the URL again in OptionURL
- This time data is passed in command line for CURL. You'd put this data in the quotes into a string and make it available in the Read event. (See CURLS ftp upload example project)

16.0.95 How to delete file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// delete file
dim ws() As String
ws.Append "DELE Temp.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. To delete use DELE and the file path.

16.0.96 How to detect display resolution changed?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X simply listen for display changed notifications.
Notes: Use the "Distribution Notification Center.rbp" example project as a base and use it to listen to notifications with the name "O3DeviceChanged".

16.0.97 How to detect retina?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use Window.BackingScaleFactorMBS to query the factor.
Example:

```
msgbox str(window1.BackingScaleFactorMBS)
```

16.0.98 How to disable force quit?

Plugin Version: all, Platform: macOS.

Answer:

Please visit this website and get the control panel for Mac OS 9 there:
http://www3.sk.sympatico.ca/tinyjohn/DFQ.html

For Mac OS X use the MBS Plugin with the SetSystemUIModeMBS method.
Notes:

Please use presentationOptions in NSApplicationMBS for Cocoa applications.

16.0.99 How to disable the error dialogs from Internet Explorer on javascript errors?

Plugin Version: all, Platform: Windows.

Answer: You can use this code in the htmlviewer open event:
Example:

```
if targetwin32 then
htmlviewer1._ole.Content.value("Silent") = True
end if
```

Notes: This disables the error dialogs from Internet Explorer.

16.0.100 How to display a PDF file in Xojo?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac OS X you can use CoreGraphics or PDFKit to display a PDF.
Notes: An alternative can be to load the PDF into a htmlviewer so the PDF plugin can display it.
On Windows you may need to use the Acrobat ActiveX control from Adobe or launch Acrobat Reader.

16.0.101 How to do a lottery in RB?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this function:
Example:

```
Sub Lotto(max as Integer,count as Integer,z() as Integer)
// Lotto count numbers of max put into the array z beginning at index 0
dim n(0) as Integer ' all the numbers
dim m as Integer ' the highest field in the current array
dim i,a,b,d as Integer ' working variables

'fill the array with the numbers
m=max-1
redim n(m)

for i=0 to m
n(i)=i+1
next

' unsort them by exchanging random ones
m=max*10
for i=1 to m
a=rnd*max
b=rnd*max

d=n(a)
n(a)=n(b)
n(b)=d
next

' get the first count to the dest array
m=count-1
redim z(m)
for i=0 to m
z(i)=n(i)
next

'sort the result
z.sort
End Sub
```

```
Sub Open()
// Test it

dim za(0) as Integer ' the array of the numbers

lotto 49,6,za ' 6 of 49 in Germany


' and display them
staticText1.text=str(za(0))+chr(13)+str(za(1))+chr(13)+str(za(2))+chr(13)+str(za(3))+chr(13)+str(za(4))+chr(13)+str(za
End Sub
```

16.0.102 How to do an asycron DNS lookup?

Plugin Version: all, Platform: Windows.

Answer: use CFHostMBS class (Mac OS X only).
Notes: Xojo internal functions and plugin DNS functions are sycronized.
You can use DNSLookupThreadMBS class for doing them asyncron.

16.0.103 How to draw a dushed pattern line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can try this code:
Example:

```
// call like this: DrawDushedPatternLine g,0,0,width,height,10

Sub DrawDushedPatternLine(g as graphics,x1 as Integer,y1 as Integer,x2 as Integer,y2 as Integer, partlen
as Integer)
dim x,y,ox,oy as Double
dim dx,dy as Double
dim w,h,d as Double
dim b as Boolean

w=x2-x1
h=y2-y1

d=sqrt(w*w+h*h)

dx=w/d*partlen
dy=h/d*partlen
```

```
b=true
x=x1
while (x<x2) and (y<y2)
ox=x
oy=y

x=x+dx
y=y+dy

if b then
g.DrawLine ox,oy,x,y
end if

b=not b
wend


End Sub
```

Notes: It would be possible to add this to the plugin, but I think it's better if you do it in plain Xojo code, so it even works on Windows.

16.0.104 How to draw a nice antialiased line?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

This code can help you althrough it's not perfect.
You need to set lc to the current color you use.
Example:

```
Sub drawLine(xs as Integer, ys as Integer, xe as Integer, ye as Integer, face as RGBSurface, lineColor as color)
dim intX, intY, count, n, xDiff, yDiff as Integer
dim v, v1, floatX, floatY, xx, yy, xStep, yStep as Double
dim c as color

const st=1.0

xDiff=xe-xs
yDiff=ye-ys
count=max(abs(xDiff), abs(yDiff))
xStep=xDiff/count
yStep=yDiff/count
```

```
xx=xs
yy=ys
for n=1 to count
intX=xx
intY=yy
floatX=xx-intX
floatY=yy-intY

v=(1-floatX)*(1-floatY)*st
v1=1-v
c=face.pixel(intX, intY)
face.pixel(intX, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*(1-floatY)*st
v1=1-v
c=face.pixel(intX+1, intY)
face.pixel(intX+1, intY)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=(1-floatX)*floatY*st
v1=1-v
c=face.pixel(intX, intY+1)
face.pixel(intX, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)
v=floatX*floatY*st
v1=1-v
c=face.pixel(intX+1, intY+1)
face.pixel(intX+1, intY+1)=rgb(v*lineColor.red+v1*c.red, v*lineColor.green+v1*c.green, v*lineColor.blue+v1*c.blue)

xx=xx+xStep
yy=yy+yStep
next

End Sub
```

Notes:

PS: st should be 1 and face should be a RGBSurface or a Graphics object.

16.0.105 How to dump java class interface?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In terminal you can use ”javap -s <classname>” to display the class with the method names and parameters.
Notes: For example show ResultSet class: javap -s java.sql.ResultSet

16.0.106 How to duplicate a picture with mask or alpha channel?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this function:
Example:

```
Function Duplicate(extends p as Picture) As Picture
#if RBVersion >= 2011.04 then
if p.HasAlphaChannel then

// create nw picture and copy content:
dim q as new Picture(p.Width, p.Height)
q.Graphics.DrawPicture p,0,0

Return q

end if
#endif

// create new picture
dim q as new Picture(p.Width, p.Height, 32)

// get mask
dim oldMask as Picture = p.mask(false)
if oldMask = nil then
// no mask, so simple copy
q.Graphics.DrawPicture p,0,0
Return q
end if

// remove mask
p.mask = nil

// copy picture and mask
q.Graphics.DrawPicture p, 0, 0
q.mask.Graphics.DrawPicture oldMask,0,0

// restore mask
p.mask = oldmask

Return q
End Function
```

Notes: Simply copy it to a module and call it like this: q = p.duplicate.
The code above works with old Xojo versions because of the #if even if your RS version does not support alpha channel pictures. This way it's future proof.

16.0.107 How to enable assistive devices?

Plugin Version: all, Platform: macOS.

Answer: You can use AppleScript code like below:
Notes: tell application "System Events"
activate

set UI elements enabled to true

return UI elements enabled
end tell

You can run this with AppleScriptMBS class.

16.0.108 How to encrypt a file with Blowfish?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
dim fi as FolderItem = SpecialFolder.Desktop.Child("test.xojo_binary_project")
dim fo as FolderItem = SpecialFolder.Desktop.Child("test.encrypted")

// read input
dim bi as BinaryStream = BinaryStream.Open(fi)
dim si as string = bi.Read(bi.Length)
bi.Close

// encrypt
dim so as string = BlowfishMBS.Encrypt("MyKey",si)

// write output
dim bo as BinaryStream = BinaryStream.Create(fo)
bo.Write so
bo.Close
```

Notes: Of course you can decrypt same way, just use Decrypt function and of course swap files.

16.0.109 How to extract text from HTML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use both RemoveHTMLTagsMBS and DecodingFromHTMLMBS like this:
Example:

```
dim html as string = "<p><B>Gr&uuml;&szlig;e</B></P>"
dim htmltext as string = RemoveHTMLTagsMBS(html)
dim text as string = DecodingFromHTMLMBS(htmltext)

MsgBox text // shows: Gr√º√üe
```

Notes: You can use it together with RemoveHTMLTagsMBS to remove html tags. What you get will be the text without tags.
DecodingFromHTMLMBS turns HTML escapes back to unicode characters. Like ä to √§.

16.0.110 How to find empty folders in a folder?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Try this code:
Example:

```
dim folder as folderitem // your folder

dim c as Integer = folder.count
for i as Integer = 1 to c
dim item as folderitem = folder.trueitem(i)
if item = nil then
// ignore
elseif item.directory then
// folder
if item.count = 0 then
// found empty folder
end if
end if
next
```

16.0.111 How to find iTunes on a Mac OS X machine fast?

Plugin Version: all, Platform: macOS.

Answer: You can try Launch Services.
Example:

```
dim f as FolderItem

f=LaunchServicesFindApplicationForInfoMBS("hook","com.apple.iTunes","iTunes.app")

MsgBox f.NativePath
```

16.0.112 How to find network interface for a socket by it's name?

Plugin Version: all, Platform: macOS.

Answer: You can use our plugin to build a lookup table.
Example:

```
Function FindNetworkInterface(name as string) As NetworkInterface
name = name.trim

if name.len = 0 then Return nil

// search by IP/MAC
dim u as Integer = System.NetworkInterfaceCount-1
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if n.IPAddress = name or n.MACAddress = name then
Return n
end if
next

// use MBS Plugin to build a mapping
dim interfaces() as NetworkInterfaceMBS = NetworkInterfaceMBS.AllInterfaces
dim map as new Dictionary

for each n as NetworkInterfaceMBS in interfaces
dim IPv4s() as string = n.IPv4s
dim IPv6s() as string = n.IPv6s

for each IPv4 as string in IPv4s
map.Value(IPv4) = n.Name
next
for each IPv6 as string in IPv6s
map.Value(IPv6) = n.Name
next
if n.MAC<>"" then
map.Value(n.MAC) = n.Name
```

```
end if
next

// now search interfaces by name, IPv4 or IPv6
for i as Integer = 0 to u
dim n as NetworkInterface = System.GetNetworkInterface(i)
if map.Lookup(n.IPAddress, "") = name then
Return n
end if

if map.Lookup(n.MACAddress, "") = name then
Return n
end if
next

End Function
```

Notes: The code above uses a lookup table build using NetworkInterfaceMBS class to find the network interface by name.

16.0.113 How to find version of Microsoft Word?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
// find Word
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.microsoft.Word","")

// open bundle
dim c as new NSBundleMBS(f)

// read info
dim d as Dictionary = c.infoDictionary

// show version
MsgBox d.Lookup("CFBundleVersion","")
```

Notes: Older versions of Word can be found with creator code "MSWD".

16.0.114 How to fix CURL error 60/53 on connecting to server?

Plugin Version: all, Platform: macOS.

Answer: You probably connect with SSL and you have no valid certificate.
Example:

```
dim d as new CURLSMBS

// Disable SSL verification
d.OptionSSLVerifyHost = 0 // don't verify server
d.OptionSSLVerifyPeer = 0 // don't proofs certificate is authentic

// With SSL Verification:
dim cacert as FolderItem = Getfolderitem("cacert.pem")
d.OptionCAInfo = cacert.NativePath
d.OptionSSLVerifyHost = 2 // verify server
d.OptionSSLVerifyPeer = 1 // proofs certificate is authentic
```

Notes: You can either use the code above to disable the SSL verification and have no security.
Or you use the cacert file and enable the verification. Than you only get a connection if the server has a valid certificate.

see also:
http://curl.haxx.se/ca/

16.0.115 How to format double with n digits?

Plugin Version: all, Platform: macOS.

Answer: You can use the FormatMBS function for this.
Example:

```
dim d as Double = 123.4567890
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)

d = 0.000000123456
listbox1.AddRow FormatMBS("%f", d)
listbox1.AddRow FormatMBS("%e", d)
```

```
listbox1.AddRow FormatMBS("%g", d)

listbox1.AddRow FormatMBS("%5.5f", d)
listbox1.AddRow FormatMBS("%5.5e", d)
listbox1.AddRow FormatMBS("%5.5g", d)
```

Notes: see FormatMBS for details.
In general %f is normal style, %e is scientific and %g is whichever gives best result for given space.

16.0.116 How to get a time converted to user time zone in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.GMTOffset property.
Example:

```
Sub Open()
// current date on server
dim d as new date
dim s as string = d.LongTime

// adjust to client GMT offset
d.GMTOffset = d.GMTOffset + Session.GMTOffset

dim t as string = D.LongTime

MsgBox s+EndOfLine+t
End Sub
```

16.0.117 How to get an handle to the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: This function returns a handle for the frontmost window:
Example:

```
Function GetForegroundWindowHandle() as Integer
#if targetwin32 then
declare function GetForegroundWindow Lib "user32.dll" as Integer
Return GetForegroundWindow()
#endif
End Function
```

16.0.118 How to get CFAbsoluteTime from date?

Plugin Version: all, Platforms: macOS, Windows.

Answer: Use code like this:
Example:

```
dim d as new date
dim t as CFTimeZoneMBS = SystemCFTimeZoneMBS
dim g as new CFGregorianDateMBS
g.Day = d.Day
g.Month = d.Month
g.Year = d.Year
g.Minute = d.Minute
g.Hour = d.Hour
g.Second = d.Second

dim at as CFAbsoluteTimeMBS = g.AbsoluteTime(t)
dim x as Double = at.Value

MsgBox str(x)
```

Notes: As you see we need a timezone and put the date values in a gregorian date record.
Now we can query absolute time for the given timezone.

16.0.119 How to get client IP address on web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebSession.RemoteAddress property.
Example:

```
Sub Open()
Title = Session.RemoteAddress
End Sub
```

16.0.120 How to get fonts to load in charts on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the SetFontSearchPath method in the CDBaseChartMBS class to specify where your fonts are.
Example:

```
if TargetLinux then
CDBaseChartMBS.SetFontSearchPath "/usr/share/fonts/truetype;/usr/share/fonts/truetype/msttcorefonts"
else
// on Mac and Windows we use system fonts.
end if

// also you can later switch default fonts:

dim Chart as CDBaseChartMBS // your chart

#If TargetARM And TargetLinux Then
// use specific fonts on Linux on Raspberry Pi
Call Chart.setDefaultFonts("/usr/share/fonts/truetype/piboto/PibotoLt-Regular.ttf","/usr/share/fonts/truetype/piboto/Pi
#EndIf
```

Notes: On macOS, iOS and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

16.0.121 How to get fonts to load in DynaPDF on Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use the AddFontSearchPath method in the DynaPDFMBS class to specify where your fonts are.
Example:

```
dim d as new DynaPDFMBS
if TargetLinux then
call d.AddFontSearchPath "/usr/share/fonts/truetype", true
else
// on Mac and Windows we use system fonts.
end if
```

Notes: On Mac OS X and Windows, the fonts are loaded from the system's font folder.

e.g. if you use ubuntu, you can install the ttf-mscorefonts-installer package and call this method with "/usr/share/fonts/truetype/msttcorefonts" as the path. No backslash on the end of a path, please.

16.0.122 How to get GMT time and back?

Plugin Version: all, Platform: macOS.

Answer: You can use the date class and the GMTOffset property.
Example:

```
// now
dim d as new date

// now in GMT
dim e as new date
e.GMTOffset = 0

// show
MsgBox str(d.TotalSeconds,"0.0")+" "+str(e.TotalSeconds, "0.0")

dim GMTTimeStamp as Double = e.TotalSeconds

// restore
dim f as new date

// add GMT offset here
f.TotalSeconds = GMTTimeStamp + f.GMTOffset*3600
// because here it's removed
f.GMTOffset = f.GMTOffset

MsgBox d.ShortTime+" ("+str(d.GMTOffset)+") "+str(d.TotalSeconds,"0.0")+EndOfLine+_
e.ShortTime+" ("+str(e.GMTOffset)+") "+str(e.TotalSeconds,"0.0")+EndOfLine+_
f.ShortTime+" ("+str(f.GMTOffset)+") "+str(f.TotalSeconds,"0.0")
```

Notes: It's sometimes a bit tricky with the date class as setting one property often changes the others.

16.0.123 How to get good crash reports?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Check this website from the webkit website:
Notes: http://webkit.org/quality/crashlogs.html

16.0.124 How to get list of all threads?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the runtime module like in this function:
Example:

```
Function Threads() As Thread()
#pragma DisableBackgroundTasks
dim t() as Thread

Dim o as Runtime.ObjectIterator=Runtime.IterateObjects
While o.MoveNext
if o.Current isa Thread then
t.Append thread(o.current)
end if
Wend

Return t
End Function
```

Notes: This returns an array of all thread objects currently in memory.
The pragma is important here as it avoids thread switches which may cause a thread to be created or deleted.

16.0.125 How to get parameters from webpage URL in Xojo Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the Webpage.ParametersReceived event.
Example:

```
Sub ParametersReceived(Variables As Dictionary)
for each key as Variant in Variables.keys
MsgBox key+" ->"+Variables.Value(key)
next
End Sub
```

Notes: The text encodings of this strings is not defined in Xojo 2010r5. Please use DefineEncoding.

16.0.126 How to get the color for disabled textcolor?

Plugin Version: all, Platform: macOS.

Answer: Ask the appearance manager:
Example:

```
Function GetThemeTextColor(inColor as Integer, inDepth as Integer, inColorDev as Boolean) As Color
declare function GetThemeTextColor lib "Carbon" (inColor as Integer, inDepth as Integer, inColorDev as Boolean, outColor as Ptr) as Integer

dim i as Integer
dim col as MemoryBlock

col = newMemoryBlock(6)

i = GetThemeTextColor(inColor, inDepth, inColorDev, col)

return RGB(col.UShort(0)\256, col.UShort(2)\256, col.UShort(4)\256)
End Function
```

Notes: The color for this is:

```
const kThemeTextColorDialogInactive = 2.

c = GetThemeTextColor(kThemeTextColorDialogInactive, Screen(0).Depth, true)
```

For Mac OS X you should use "CarbonLib" instead of "AppearanceLib" ...

16.0.127 How to get the current free stack space?

Plugin Version: all, Platform: macOS.

Answer: You can something like the code below:
Example:

```
Sub ShowStackSize()
dim threadid as Integer
dim size as Integer

declare function GetCurrentThread lib "Carbon" (byref threadid as Integer) as short
declare function ThreadCurrentStackSpace lib "Carbon" (threadid as Integer, byref size as Integer) as short

if GetCurrentThread(threadid)=0 then
if 0=ThreadCurrentStackSpace(threadid,size) then
MsgBox str(size)
end if
end if
```

```
End Sub
```

Notes: For Mac OS 9, use "ThreadLib" instead of "CarbonLib". You can use #if if you like for that.

16.0.128 How to get the current timezone?

Plugin Version: all, Platforms: macOS, Windows.

Answer:

You can use the TimeZoneMBS class or the CFTimeZoneMBS class.
Or code like below:
Example:

```
Function GMTOffsetInMinutes() as Integer
// Returns the offset of the current time to GMT in minutes.
// supports Mac OS and Windows, but not Linux yet (let me know if
// you have code for that, please)
//
// Note that the offset is not always an even multiple of 60, but
// there are also half hour offsets, even one 5:45h offset

// This version by Thomas Tempelmann (rb@tempel.org) on 25 Nov 2005
// with a fix that should also make it work with future Intel Mac targets.
//
// Using code from various authors found on the RB NUG mailing list

dim result, bias, dayLightbias as Integer
dim info as memoryBlock
dim offset as Integer

#if targetMacOS then

Declare Sub ReadLocation lib "Carbon" (location As ptr)

info = NewMemoryBlock(12)
ReadLocation info
if false then
// bad, because it does not work on Intel Macs:
'offset = info.short(9) * 256 + info.byte(11)
else
offset = BitwiseAnd (info.long(8), &hFFFFFF)
end

offset = info.short(9) * 256 + info.byte(11)
```

```
offset = offset \60
return offset

#endif

#if targetWin32 then

Declare Function GetTimeZoneInformation Lib "Kernel32" ( tzInfoPointer as Ptr ) as Integer
// returns one of
// TIME_ZONE_ID_UNKNOWN 0
// – Note: e.g. New Delhi (GMT+5:30) and Newfoundland (-3:30) return this value 0
// TIME_ZONE_ID_STANDARD 1
// TIME_ZONE_ID_DAYLIGHT 2

info = new MemoryBlock(172)
result = GetTimeZoneInformation(info)

bias = info.Long(0)
// note: the original code I found in the NUG archives used Long(84) and switched to Long(0)
// only for result=1 and result=2, but my tests found that Long(0) is also the right value for result=0

if result = 2 then
daylightBias = info.long(168)
end if
offset = - (bias + dayLightbias)
return offset

#endif

End Function
```

16.0.129 How to get the current window title?

Plugin Version: all, Platform: macOS.

Answer: The code below returns the current window title for the frontmost window on Mac OS X if Accessibilty services are
Example:

```
Function CurrentWindowTitle() As string
// your application needs permissions for accessibility to make this work!

dim SystemWideElement,FocusedApplicationElement,FocusedWindowElement as AXUIElementMBS
dim FocusedApplication,FocusedWindow,Title as AXValueMBS
dim s as String
dim cs as CFStringMBS
```

```
SystemWideElement=AccessibilityMBS.SystemWideAXUIElement
if SystemWideElement<>nil then
FocusedApplication=SystemWideElement.AttributeValue(AccessibilityMBS.kAXFocusedApplicationAttribute)
if FocusedApplication.Type=AccessibilityMBS.kAXUIElementMBSTypeID then
FocusedApplicationElement=new AXUIElementMBS
FocusedApplicationElement.Handle=FocusedApplication.Handle
FocusedApplicationElement.RetainObject

FocusedWindow=FocusedApplicationElement.AttributeValue(AccessibilityMBS.kAXFocusedWindowAttribute)

if FocusedWindow<>nil and AccessibilityMBS.kAXUIElementMBSTypeID=FocusedWindow.Type then

FocusedWindowElement=new AXUIElementMBS
FocusedWindowElement.Handle=FocusedWindow.Handle
FocusedWindowElement.RetainObject

Title=FocusedWindowElement.AttributeValue(AccessibilityMBS.kAXTitleAttribute)
if Title<>nil and Title.Type=kCFStringMBSTypeID then
cs=new CFStringMBS
cs.handle=Title.Handle
cs.RetainObject
Return cs.str
end if
end if
end if
end if
End Function
```

16.0.130 How to get the cursor blink interval time?

Plugin Version: all, Platform: macOS.

Answer: On Mac OS you can use GetCaretTime from the toolbox.
Example:

```
declare function GetCaretTime lib "Carbon" () as Integer

MsgBox str(GetCaretTime())+" ticks"
```

Notes: 60 ticks make one second.

16.0.131 How to get the list of the current selected files in the Finder?

Plugin Version: all, Platform: macOS.

Answer:

Use the AppleScript like this one:

```
tell application "finder"
return selection
end tell
```

Which translates into this AppleEvent:

```
Process("Finder").SendAE "core,getd,'—-':obj { form:prop, want:type(prop), seld:type(sele), from:'null'() }
"
```

and as Xojo code it looks like this:
Example:

```
dim ae as appleevent
dim o1 as appleeventObjectSpecifier
dim f as folderItem
dim aList as appleeventdescList
dim i as Integer
dim dateiname as string

// setup the AppleEvent
o1=getpropertyObjectDescriptor( nil, "sele")
ae= newappleEvent("core", "getd", "MACS")
ae.objectSpecifierParam("—-")=o1

// send it
if ae.send then
// got the list
alist=ae.replyDescList

// now show the list of filename into an editfield:

for i=1 to alist.count
f=alist.folderItemItem(i)

dateiname=f.name
// editfield1 with property "mulitline=true"!
editfield1.text=editfield1.text + dateiname + chr(13)
next
```

```
end if
```

16.0.132 How to get the Mac OS system version?

Plugin Version: all, Platform: macOS.

Answer: The following code queries the value and displays the version number:
Example:

```
dim first as Integer
dim second as Integer
dim third as Integer
dim l as Integer

if System.Gestalt("sysv",l) then

Third=Bitwiseand(l,15)
second=Bitwiseand(l\16,15)
first=Bitwiseand(l\256,15)+10*Bitwiseand(l\256\16,15)
end if

if First>=10 then
msgbox "Mac OS X "+str(First)+"."+str(Second)+"."+str(third)
else
msgbox "Mac OS "+str(First)+"."+str(Second)+"."+str(third)
end if
```

16.0.133 How to get the Mac OS Version using System.Gestalt?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
Dim s As String
Dim b As Boolean
Dim i, resp as Integer

// Systemversion
b = System.Gestalt("sysv", resp)
If b then
s = Hex(resp)
```

```
For i =Len(s)-1 DownTo 1
s=Left(s,i)+"."+Mid(s,i+1)
Next
MsgBox "Systemversion: Mac OS " + s
end if
```

Notes: The MBS Plugin has a SystemInformationMBS.OSVersionString function for this.

16.0.134 How to get the screensize excluding the task bar?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Use the Screen class with the available* properties.

16.0.135 How to get the size of the frontmost window on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Notes: Make yourself a class for the WindowRect with four properties:

```
Bottom as Integer
Left as Integer
Right as Integer
Top as Integer
```

Add the following method to your class:

```
Sub GetWindowRect(windowhandle as Integer)
dim err as Integer
dim mem as memoryBlock
#if targetwin32 then
Declare Function GetWindowRect Lib "user32.dll" (hwnd as Integer, ipRect As Ptr) as Integer

mem = newmemoryBlock(16)
err = GetWindowRect(windowhandle, mem)
Left = mem.long(0)
Top = mem.Long(4)
Right = mem.Long(8)
Bottom = mem.Long(12)
```

```
#endif
End Sub
```

Good to use for the MDI Master Window!

16.0.136 How to get the source code of a HTMLViewer?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
// for Windows:

msgbox HTMLViewer1.IEHTMLTextMBS

// for MacOS with WebKit 2.x:

msgbox HTMLViewer1.WKWebViewMBS.HTMLText
```

16.0.137 How to get Xojo apps running Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You need to install some requuire packages.
Notes: You need CUPS as well as GTK packages. On 64 bit systems also the ia32-libs package.

Please note that you need a x86 compatible Linux. So no PPC, Power, ARM or other CPUs.

16.0.138 How to handle really huge images with GraphicsMagick or ImageMagick?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Sometimes it may be better to use an extra application to process images.
Notes: A typical 32 bit app made with Xojo can use around 1.8 GB on Windows and 3 GB on Mac OS X. Some images may be huge, so that processing them causes several copies of the image to be in memory. With a 500 MB image in memory, doing a scale or rotation may require a temp image. So with source, temp and dest images with each 500 MB plus your normal app memory usage, you may hit the limit of Windows with 1.8 GB.

In that case it may be worth running a tool like gm in the shell class. gm is the command line version of GraphicsMagick. There you can run the 64 bit version which is not limited in memory like your own application. Also you can monitor progress and keep your app responsive.

16.0.139 How to handle tab key for editable cells in listbox?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this function:
Example:

```
Function HandleTabInList(list as listbox, row as Integer, column as Integer, key as String) As Boolean
// Handle tab character in Listbox.CellKeyDown event

Select case asc(key)
case 9
if Keyboard.AsyncShiftKey then
// back

// look for column left
for i as Integer = column-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next

// not found, so look in row before
row = row - 1
if row >= 0 then
for i as Integer = list.ColumnCount-1 downto 0
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
else
// forward

// look for column right
for i as Integer = column+1 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
```

```
// not found, so look in row below
row = row + 1
if row <list.ListCount then
for i as Integer = 0 to list.ColumnCount-1
if list.ColumnType(i) >= list.TypeEditable then
list.EditCell(row, i)
Return true
end if
next
end if
end if
end Select
End Function
```

Notes: You call it from CellKeyDown event like this:

```
EventHandler Function CellKeyDown(row as Integer, column as Integer, key as String) As Boolean
if HandleTabInList(me, row, column, key) then Return true
End EventHandler
```

As you see in the code, we handle tab and shift + tab for moving back and forward. Also we wrap to previous/next row if needed. Feel free to extend this to wrap from last to first row or create a new row for editing.

16.0.140 How to hard link MapKit framework?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Our MapKit classes weak link the framework. If you need hard linking it for the App Store, you can add this method to a class:
Example:

```
Sub ReferenceMapKit()
// just put this in window or app class

#if TargetMachO and Target64Bit then
Declare sub testing Lib "MapKit" Selector "test" (id as ptr)
testing(nil)
#endif

End Sub
```

Notes: No need to call the method.
Just having it in a window or app, will cause the compiler to hard link the framework.

16.0.141 How to have a PDF downloaded to the user in a web application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the PDF file with the PDF plugin from the browser.
Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer
CurrentFile.ForceDownload = true

// start the download
showurl(CurrentFile.url)
```

Notes: See our Create PDF example for the Xojo Web Edition.

16.0.142 How to hide all applications except mine?

Platform: macOS.

Answer: The code below will on Mac OS hide all applications except your one:
Example:

```
dim p as new ProcessMBS

p.GetFirstProcess
do
if not p.FrontProcess then
p.Visible=false
end if
loop until not p.GetNextProcess
```

16.0.143 How to hide script errors in HTMLViewer on Windows?

Plugin Version: all, Platform: Windows.

Answer: Set Internet Explorer to silent mode with code like this:
Example:

```
htmlviewer1._ole.Content.value("Silent") = True
```

Notes: Simply put this code in the open event of your htmlviewer control (using me instead of htmlviewer1).

16.0.144 How to hide the grid/background/border in ChartDirector?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: If you want to hide something in a chart, simply assign the kTransparent constant as color.

16.0.145 How to hide the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub HideCursor Lib "Carbon" () Inline68K("A852")

HideCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

16.0.146 How to insert image to NSTextView or TextArea?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to insert file:
Example:

```
// insert a file to textview

Public Sub InsertFile(textview as NSTextViewMBS, f as FolderItem)
// read to file
```

```
dim b as BinaryStream = BinaryStream.Open(f)
dim s as string = b.Read(b.Length)

// build wrapper
dim fileWrapper as NSFileWrapperMBS = NSFileWrapperMBS.initRegularFileWithContents(s)
fileWrapper.preferredFilename = f.name

// make attachment
dim fileAttachment as new NSTextAttachmentMBS(fileWrapper)
dim attributedString as NSAttributedStringMBS = NSAttributedStringMBS.attributedStringWithAttach-
ment(fileAttachment)

// add to a NSTextViewMBS
textview.insertText attributedString

End Sub
```

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

16.0.147 How to jump to an anchor in a htmlviewer?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You can use javascript to change the current window's location.
Example:

```
// load website
htmlviewer1.LoadURL "http://www.monkeybreadsoftware.net/addressbook-abpersonmbs.shtml"

// later jump to anchor named "16":

if TargetWin32 then
call HTMLViewer1.IERunJavaScriptMBS "window.location = ""#16"""
end if
```

16.0.148 How to keep a movieplayer unclickable?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: To keep the user away from clicking on a playing Movie you can just drop a Canvas in front of the Movieplayer and take the clicks there.
Example:

```
Function Canvas1.MouseDown(X as Integer, Y as Integer) as boolean
return true // take it and do nothing
End Function
```

16.0.149 How to keep my web app from using 100% CPU time?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Linux and MacOS you can use renice command in the terminal. On Windows use the task manager to reduce priority.
Notes: If you launch your app with nohup on Linux or Mac OS X like this from the terminal or a script:

nohup /webapps/MyApp/MyApp &

you can simply have a second line saying this:

renice 20 $!

which tells the system to lower priority to lowest value for the latest background process.

16.0.150 How to kill a process by name?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can kill a process (or application) by name if you loop over all the processes and kill the one you need.
Example:

```
dim p as new ProcessMBS
p.GetfirstProcess ' get first
do
if p.name = "TextEdit" then
call p.KillProcess
Return
end if
loop until not p.GetNextProcess
```

Notes: You may want to check the result of killProcess function. Not every user is allowed to kill every application.

16.0.151 How to know how many CPUs are present?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

```
Function GetCPUCount() as Integer
Declare Function MPProcessors Lib "Carbon" () as Integer

Return MPProcessors()
End Function
```

Notes: Your app will than need that library to launch on Classic. To avoid this the MBS plugin checks if this library is available and return 1 if it's not available.

16.0.152 How to know the calling function?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: On Mac you can use a helper function like this this code:
Example:

```
Public Function CallingFunction() as string
// Query name of calling function of a function

#Pragma BreakOnExceptions false

try

// raise a dummy exception
dim r as new NilObjectException
raise r

catch x as NilObjectException

// get stack
dim stack() as string = x.Stack

// pick function name and return
dim name as string = stack(2)
Return name

end try
End Function
```

Notes: You need to include function names in your application.

16.0.153 How to launch an app using it's creator code?

Plugin Version: all, Platform: macOS.

Answer: Send an AppleEvent "oapp" with the creator code to the Finder ("MACS"):
Example:

```
Dim a as AppleEvent
dim creator as string

creator = "MSIE" ' here the Internet Explorer

a = NewAppleEvent("aevt", "odoc", "MACS")
a.Timeout = -1

a.ObjectSpecifierParam("—-") = GetUniqueIDObjectDescriptor("appf", nil, creator)

if not a.send then
msgBox "An error has occured"
else

end if
```

16.0.154 How to launch disc utility?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this code:
Example:

```
dim f as FolderItem = LaunchServicesFindApplicationForInfoMBS("","com.apple.DiskUtility","")

if f<>Nil then
f.Launch
end if
```

Notes: This works even if people renamed the disc utility or moved it to another folder.

16.0.155 How to make a lot of changes to a REAL SQL Database faster?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You may try to embed your changes to the database between two transaction calls.
Example:

```
dim db as Database // some database

db.SQLExecute "BEGIN TRANSACTION"
// Do some Stuff
db.SQLExecute "END TRANSACTION"
```

Notes: This can increase speed by some factors.

16.0.156 How to make a NSImage object for my retina enabled app?

Plugin Version: all, Platform: macOS.

Answer: You can use code like this:
Example:

```
Function NewRetinaImage(pic as Picture, mask as Picture = nil) As NSImageMBS
// first make a NSImageMBS from it
dim n as new NSImageMBS(pic, mask)

// now set to half the size, so we have 2x pixels for the image
n.size = new NSSizeMBS(n.width/2, n.height/2)

// and return
Return n
End Function
```

Notes: The thing to do is to have 2x the pixels, but assign a size to the image which gives it the right size in points.
You can pass the NSImageMBS from here to NSMenuItemMBS. For Retina displays, the full resolution is used. For others it will be reduced.

16.0.157 How to make a window borderless on Windows?

Plugin Version: all, Platform: Windows.

Answer: Try this declares:
Example:

```
// Sets window to borderless popup type, and sets its initial dimensions.
// Call this method, then Win32SetBorderlessPos, and then RB's Show
// method. Use RB Frame type 7 (Global Floating Window).

Const SWP_NOMOVE = &H2
Const SWP_FRAMECHANGED = &H20
Const HWND_TOPMOST = -1
Const GWL_STYLE = -16
Const WS_POPUPWINDOW = &H80880000

Dim styleFlags as Integer

#If TargetWin32 Then

Declare Function SetWindowLong Lib "user32" Alias "SetWindowLongA" (hwnd as Integer, nIndex as Integer, dwNewLong as Integer) as Integer
Declare Function SetWindowPos Lib "user32" (hwnd as Integer, hWndInstertAfter as Integer, x as Integer, y as Integer, cx as Integer, cy as Integer, flags as Integer) as Integer

styleFlags = SetWindowLong( w.WinHWND, GWL_STYLE, WS_POPUPWINDOW )
styleFlags = BitwiseOr( SWP_FRAMECHANGED, SWP_NOMOVE )
styleFlags = SetWindowPos( w.WinHWND, HWND_TOPMOST, 0, 0, wd, ht, styleFlags )

#EndIf
```

16.0.158 How to make an alias using AppleEvents?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
Sub MakeAlias(folder as folderitem, target as folderitem, aliasname as string)
dim ev as AppleEvent
dim myResult as boolean
dim properties as AppleEventRecord

ev = NewAppleEvent("core","crel","MACS")
ev.MacTypeParam("kocl") = "alis"
ev.FolderItemParam("to ") = target
ev.FolderItemParam("insh") = folder

properties=new AppleEventRecord
```

```
properties.StringParam("pnam")=aliasname

ev.RecordParam("prdt")=properties

myResult = ev.send
// true on success, false on error
End Sub
```

Notes: Call it like this:
MakeAlias SpecialFolder.Desktop, SpecialFolder.Desktop.Child("Gif Copy.rb"), "test.rb alias"

Seems to not work on Mac OS X 10.6

16.0.159 How to make AppleScripts much faster?

Plugin Version: all, Platform: macOS.

Answer: use "ignoring application responses" like in this example:
Notes: on run { fn,fpx,fpy }
ignoring application responses
tell app "Finder" to set the position of folder fn to fpx,fpy
end ignoring
end run

16.0.160 How to make double clicks on a canvas?

Plugin Version: all, Platform: macOS.

Answer:

Update: Newer Xojo versions support DoubleClick event, so you don't need this code.

Here's my tip from the tips list on how to add a double-click event to the Canvas control. The technique could easily be used for a window or any Rectcontrol:

Because of its built-in drawing methods, the Canvas control is often used to create custom interface controls. But while the Canvas control has event handlers for most mouse events, it doesn't have an event handler for DoubleClick events. Fortunately, you can add a double-click event handler to a Canvas control easily. Basically, you're going to create a new class based on Canvas and add a double-click event to that. You can then use the new class anytime you need a Canvas with a double-click event.

To create a new Canvas class with a DoubleClick event handler, do this:

1. Add a new class to your project.
2. Set the Super property of the new class to "Canvas".
3. Change the name of this new class to "DoubleClickCanvas".

A double-click occurs when two clicks occur within the users double-click time (set in the Mouse control panel on both Macintosh and Windows) and within five pixels of each other. So, you'll need a few properties to store when and where the last click occurred.

4. Add a new property with the following declaration and mark it as private: lastClickTicks as Integer
5. Add a new property with the following declaration and mark it as private: lastClickX as Integer
6. Add a new property with the following declaration and mark it as private: lastClickY as Integer

Since the Canvas control doesn't have a DoubleClick event, you will need to add one.

7. Add a new event to your class by choosing New Event from the Edit menu and enter "DoubleClick" as the event name.

Double-clicks occur on MouseUp. In order for the mouseUp event to fire, you must return True in the MouseDown event.

8. In the MouseDown event, add the following code:
Return True

In the MouseUp event, you will need to determine what the users double-click time is. This value is represented on both the Mac and Windows in ticks. A tick is 1/60th of a second. Since there isn't a built-in function for this, you'll need to make a toolbox call. The mouseUp event code below makes the appropriate toolbox call for both Macintosh and Windows. It then compares the time of the users last click to the time of the current click and compares the location of the users last click to the location of the current click.

9. Add the following code to the MouseUp event:

```
dim doubleClickTime, currentClickTicks as Integer

#if targetMacOS then
Declare Function GetDblTime Lib "Carbon" () as Integer
doubleClickTime = GetDblTime()
#endif

#if targetWin32 then
Declare Function GetDoubleClickTime Lib "User32.DLL" () as Integer
```

```
doubleClickTime = GetDoubleClickTime()/60 // convert to ticks from milliseconds
#endif

currentClickTicks = ticks
//if the two clicks happened close enough together in time
if (currentClickTicks - lastClickTicks) <= doubleClickTime then
//if the two clicks occured close enough together in space
if abs(X - lastClickX) <= 5 and abs(Y - LastClickY) <= 5 then
DoubleClick //a double click has occured so call the event
end if
end if
lastClickTicks = currentClickTicks
lastClickX = X
lastClickY = Y
```

10. Now to test out your new DoubleClickCanvas, drag the class from the Project window to a window in your project to create an instance of it.

11. Double-click on the canvas you just added to your window to open the Code Editor. Notice that the canvas has a DoubleClick event handler. In this event handler, add the following code:

```
BEEP
```

16.0.161 How to make my Mac not sleeping?

Plugin Version: all, Platform: macOS.

Answer: Just inform the Mac OS about some system activity with code like this:
Example:

```
Sub UpdateSystemActivity()

#if TargetCarbon
declare function myUpdateSystemActivity lib "Carbon" alias "UpdateSystemActivity" (activity as Integer)
as short

const OverallAct = 0 // Delays idle sleep by small amount */
const UsrActivity = 1 // Delays idle sleep and dimming by timeout time */
const NetActivity = 2 // Delays idle sleep and power cycling by small amount */
const HDActivity = 3 // Delays hard drive spindown and idle sleep by small amount */
const IdleActivity = 4 // Delays idle sleep by timeout time */

dim e as Integer

e=myUpdateSystemActivity(UsrActivity)
```

```
// you may react on an error if e is not 0 after the call.

#endif
End Sub
```

Notes: You may use another constant if you prefer some different behavior.
Call it maybe every second.

16.0.162 How to make my own registration code scheme?

Plugin Version: all, Platform: Windows.

Answer: There are excellent articles about how to make a registratin code scheme, but you can also simply use our RegistrationEngineMBS class.
Notes: If you need a license text, why not use the one from Xojo as a starting point?

16.0.163 How to make small controls on Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: You can try this code on Mac OS X:
Example:

```
'/*
'* Use the control's default drawing variant. This does not apply to
'* Scroll Bars, for which Normal is Large.
'*/
const kControlSizeNormal = 0

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Check Box, Combo Box, Radio Button, Scroll Bar, Slider and Tab
'* controls.
'*/
const kControlSizeSmall = 1

'/*
'* Use the control's small drawing variant. Currently supported by
'* the Indeterminate Progress Bar, Progress Bar and Round Button
'* controls.
'*/
const kControlSizeLarge = 2
```

```
'/*
'* Control drawing variant determined by the control's bounds. This
'* ControlSize is only available with Scroll Bars to support their
'* legacy behavior of drawing differently within different bounds.
'*/
const kControlSizeAuto = &hFFFF

const kControlSizeTag = "size"

declare function SetControlData lib "Carbon" (controlhandle as Integer, part as short, tagname as OSType, size as Integer, data as ptr) as short

dim m as MemoryBlock

m=NewMemoryBlock(2)
m.UShort(0)=kControlSizeSmall

Title=str(SetControlData(CheckBox1.Handle, 0, kControlSizeTag, 2, m))
```

16.0.164 How to mark my Mac app as background only?

Plugin Version: all, Platform: macOS.

Answer: You can run a build script on each build with this code:
Example:

```
Dim App As String = CurrentBuildLocation + "/" + CurrentBuildAppName + ".app"
Call DoShellCommand("/usr/bin/defaults write " + App + "/Contents/Info ""NSUIElement"" YES")
```

Notes: This will set the NSUIElement flag to YES.

16.0.165 How to move a file or folder to trash?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function MoveToTrash(f as FolderItem) As Boolean
#if TargetMacOS then
dim r as FolderItem
dim e as Integer = MacFileOperationMBS.MoveObjectToTrashSync(f, r, MacFileOperationMBS.kFSFileOperationDefaultOptions)
```

```
if e = 0 then
Return true // Ok
end if

#elseif TargetWin32 then
dim w as new WindowsFileCopyMBS

dim flags as Integer = w.FileOperationAllowUndo + w.FileOperationNoErrorUI + w.FileOperationSilent
+ w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if

flags = w.FileOperationNoErrorUI + w.FileOperationSilent + w.FileOperationNoConfirmation
if w.FileOperationDelete(f, flags) then
Return true // OK
end if
#else
// Target not supported
break
Return false
#endif
End Function
```

Notes: If you want to move a file to trash, you could use f.movefileto f.trashfolder, but that will overwrite existing files in the trash. You can use our MacFileOperationMBS class to move a file on Mac to the trash. And it uses the same code as the Finder, so files are renamed when the same name is already in use in the trash:

On Windows we use WindowsFileCopyMBS class.
Requires Mac OS X 10.5.

16.0.166 How to move an application to the front using the creator code?

Plugin Version: all, Platform: macOS.

Answer: This makes SimpleText (Code ttxt) to the frontmost application:
Example:

```
dim a as appleevent

a=newappleEvent("misc","actv","ttxt")
```

```
if a.send then
end if
```

Notes: (Code is Mac only)

16.0.167 How to move file with ftp and curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can set post/pre quotes to have ftp commands executed before or after the download/upload.
Example:

```
dim d as CURLMBS // your curl object

// rename/move file
dim ws() As String
ws.Append "RNFR Temp.txt"
ws.append "RNTO MyFile.txt"

d.SetOptionPostQuote(ws)
```

Notes: Use SetOptionPostQuote, SetOptionPreQuote or SetOptionQuote.
The ftp commands you pass here are native ftp commands and not the commands you use with ftp applications. So rename is two commands. First RNFR to tell where to rename from and second RNTO with the new file name. To delete use DELE and the file path.

16.0.168 How to normalize string on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like below:
Example:

```
Function Normalize(t as string) As string
const kCFStringNormalizationFormD = 0 // Canonical Decomposition
const kCFStringNormalizationFormKD = 1 // Compatibility Decomposition
const kCFStringNormalizationFormC = 2 // Canonical Decomposition followed by Canonical Composition
const kCFStringNormalizationFormKC = 3 // Compatibility Decomposition followed by Canonical Composition

dim s as CFStringMBS = NewCFStringMBS(t)
dim m as CFMutableStringMBS = s.Normalize(kCFStringNormalizationFormD)
```

```
Return m.str
End Function
```

Notes: This uses Apple's CFString functions to normalize unicode variants.

16.0.169 How to obscure the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub ObscureCursor Lib "Carbon" ()

ObscureCursor
```

Notes: The MBS Plugin has this function, but it's not supported for Windows.

16.0.170 How to open icon file on Mac?

Plugin Version: all, Platform: macOS.

Answer: Use the NSImageMBS class like this:
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.ico")
dim n as new NSImageMBS(f)

window1.Backdrop = n.CopyPictureWithMask
```

16.0.171 How to open PDF in acrobat reader?

Plugin Version: all, Platform: macOS.

Answer: Try this code:
Example:

```
dim pdf as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
```

```
// open PDF in Acrobat Reader on Mac:

// find app
dim bundleID as string = "com.adobe.Reader"
dim app as FolderItem = LaunchServicesFindApplicationForInfoMBS("", bundleID, "")

if app<>nil then

// launch app with parameters

dim docs() as FolderItem
docs.Append pdf

dim param as new LaunchServicesLaunchParameterMBS
param.Defaults = true
param.Application = app

dim x as FolderItem = LaunchServicesOpenXMBS(docs, param)

// on failure, simply launch it
if x = nil then
pdf.Launch(true)
end if

else
pdf.Launch(true)
end if
```

Notes: On Windows, simply use pdf.launch or WindowsShellExecuteMBS.

16.0.172 How to open printer preferences on Mac?

Plugin Version: all, Platform: macOS.

Answer: You can use our OpenMacOSXPreferencesPaneMBS function like this:
Example:

```
dim e as Integer = OpenMacOSXPreferencesPaneMBS("PrintAndFax")
if 0 = e then
MsgBox "OK"
elseif e = -43 then
MsgBox "File not found."
else
MsgBox "Error: "+str(e)
end if
```

16.0.173 How to open special characters panel on Mac?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have functions for that in Cocoa and Carbon.
Example:

```
dim a as new NSApplicationMBS
a.orderFrontCharacterPalette
```

Notes: For Cocoa, you can use orderFrontCharacterPalette method in NSApplicationMBS class.

Or simply for Carbon and Cocoa the ShowCharacterPaletteMBS method.

16.0.174 How to optimize picture loading in Web Edition?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the WebPicture class.
Notes: Take your picture and create a WebPicture object. Store this WebPicture in a property of the WebPage, Session or app (as global as possible). On the first time you use this picture on an user session, the browser will load it. Second time you use it, the browser will most likely pick it from the cache.
Having pictures in App or some module reuses the same picture for all sessions which reduces memory footprint.
This does not work well with pictures you change very often or use only for one webpage on one user.

If you like to see an example, check our Map example.

16.0.175 How to parse XML?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use code like this:
Example:

```
dim s as string = "<test><test /></test>"

try
```

```
dim x as new XmlDocument(s)
MsgBox "OK"
catch xe as XmlException
MsgBox "invalid XML"
end try
```

Notes: If you got an exception, you have a parse error.

16.0.176 How to play audio in a web app?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the HTML5 audio tag and control it with javscript.
Notes: This is just another example app I made today. It plays a christmas song. The audio file is provided by the application to the server, so no external web server is needed and this application can run stand alone. To compile and run you need Xojo 2010r5.

In the open event we search the audio files and open them as binarystreams. We create the two webfile objects. Those webfiles are part of the app class, so we have them globally. There we set the data with the content of our streams. We also define file names and mime types. They are needed so browser know what we have here:

```
audioFileM4V = new WebFile
audioFileM4V.Data = bM.Read(BM.Length)
audioFileM4V.Filename = "music.m4a"
audioFileM4V.MIMEType = "audio/m4a"
```

```
audioFileOGG = new WebFile
audioFileOGG.Data = bO.Read(BO.Length)
audioFileOGG.Filename = "music.ogg"
audioFileOGG.MIMEType = "audio/ogg"
```

Next in the open event of the webpage we have a PageSource control. The location is set to be before content. In the open event we define the html code for this. First we pick the URLs for the audio files. Than we build the html to use the audio tag. As you see, we give it an ID for later use and have it preload automatically. If you add an autoplay tag, you can have the audio play right away. Inside the audio tag we have two sources so we provide audio for both Firefox (OGG) and Safari (MPEG4). Finally we have a text to display if HTML5 audio tag is not supported.

You can set the source in the EditSource event:

dim urlo as string = app.audioFileOGG.URL
dim urlm as string = app.audioFileM4V.URL
me.Source = ”<audio id=””mymusic”” preload=””auto””><source src=””””+urlo+”””” type=””audio/ogg”” /><source src=””””+urlm+”””” type=””audio/mpeg”” />Your browser does not support the audio element.</audio>”

Next in the Play button we execute code to play the audio. This is a short javascript code which searches in the html document for the element with the ID ”mymusic” which is the ID of our audio tag above. Once we got the object, we call it’s play method to start playback.

me.ExecuteJavaScript(”document.getElementById(’mymusic’).play();”)

same for pause:

me.ExecuteJavaScript(”document.getElementById(’mymusic’).pause();”)

and finally for changing volume:

me.ExecuteJavaScript(”document.getElementById(’mymusic’).volume=”+str(me.Value/100.0)+”;”)

16.0.177 How to pretty print xml?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use the XML Transform method with the right XLS.
Notes: Learn more here:
http://docs.xojo.com/index.php/XMLDocument.Transform

16.0.178 How to print to PDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code below shows how to redirect printing to a PDF file on Mac OS X.
Example:

```
// get Xojo printer setup
dim p as new PrinterSetup

// now put it into NSPrintInfo to manipulate
dim n as new NSPrintInfoMBS
n.SetupString = p.SetupString
```

```
// change destination to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
n.SetSaveDestination(f)

// move back
p.SetupString = n.SetupString

// and print as usual
dim g as Graphics = OpenPrinter(p)
g.DrawString "Hello World", 20, 20
```

Notes: And you can use normal graphics class for that.

16.0.179 How to query Spotlight's Last Open Date for a file?

Plugin Version: all, Platform: macOS.

Answer: You can use a MDItemMBS objec to query this value:
Example:

```
Function LastOpenedDate(Extends F As FolderItem, DefaultOtherDates As Boolean = True) As Date
#If TargetMacOS Then
Dim xMDItem as New MDItemMBS(F)
Dim xDate as Variant

If xMDItem <>Nil Then
xDate = xMDItem.GetAttribute(xMDItem.kMDItemLastUsedDate).DateValue
If xDate IsA Date Then Return xDate
Else
If xDate <>Nil Then Break
End If
#EndIf

If DefaultOtherDates Then
If F.ModificationDate <>Nil Then Return F.ModificationDate
If F.CreationDate <>Nil Then Return F.CreationDate
End If
End Function
```

Notes: Thanks for Josh Hoggan for this example code.

16.0.180 How to quit windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim i1,i2,r as Integer
declare function ExitWindowsEx lib "user32" (uFlags as Integer, dwReserved as Integer) as Integer
i1 = 2
i2 = 0
r = ExitWindowsEx(i1,i2)
if r<>0 then
' Error()
end if

#endif
```

Notes: uFlags parameters:

```
'4 = EWX_Force
'0 = EWX_Logoff
'2 = EWX_Reboot
'1 = EWX_shutdown, should shut down computer
```

Also check the ExitWindowsMBS method.

16.0.181 How to read a CSV file correctly?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With all the rules for quotes and delimiters, you can simply use the SplitCommaSeparatedValuesMBS method in our plugins like this:
Example:

```
dim f as FolderItem = SpecialFolder.Desktop.Child("test.csv")
dim t as TextInputStream = f.OpenAsTextFile

while not t.EOF
dim s as string = t.ReadLine(encodings.ASCII)

dim items() as string = SplitCommaSeparatedValuesMBS(s, ";", """")
```

```
List.AddRow ""
dim u as Integer = UBound(items)
for i as Integer = 0 to u
List.Cell(List.LastIndex,i) = items(i)
next

wend
```

Notes: Please make sure you choose the right text encoding.

16.0.182 How to read the command line on windows?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
#if targetwin32 then
dim line as string
Dim mem as MemoryBlock

Declare Function GetCommandLineA Lib "kernel32" () As Ptr

mem=GetCommandLineA()
s=mem.cstring(0)

#endif
```

Notes: Newer Xojo versions have a system.commandline property.

16.0.183 How to render PDF pages with PDF Kit?

Plugin Version: all, Platform: Windows.

Answer: Try this code:
Example:

```
// choose a file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")

// open it as PDF Document
dim sourceFile as New PDFDocumentMBS(f)
```

```
if sourceFile.handle <>0 then // it is a PDF file

// get upper bound of pages
dim c as Integer = sourceFile.pageCount-1

// from first to last page
for n as Integer = 0 to c

// pick that page
dim page as PDFPageMBS = sourceFile.pageAtIndex(n)

// render to image
dim p as NSImageMBS = page.Render

// and convert to RB picture and display
Backdrop = p.CopyPictureWithMask

next

end if
```

Notes: PDFKit works only on Mac OS X.

16.0.184 How to restart a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","rest","MACS")
if not ae.send then
msgBox "The computer couldn't be restarted."
end if
```

16.0.185 How to resume ftp upload with curl plugin?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: CURL supports that and you simply need to set the right options.

Notes: First of course OptionUpload must be true. Second OptionFTPAppend must be true so the OptionResumeFrom is used. Store there (or in OptionResumeFromLarge) your start value.
Don't forget to implement the read event and return data there as requested.

16.0.186 How to rotate a PDF page with CoreGraphics?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: This code opens a PDF and draws the first page into a new PDF with 90¬∞ rotation.
Example:

```
// Rotate a PDF page

// our files
dim sourcefile as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
dim destfile as FolderItem = SpecialFolder.Desktop.Child("rotated.pdf")

// open PDF
dim pdf as CGPDFDocumentMBS = sourcefile.OpenAsCGPDFDocumentMBS

// query media size of first page
dim r as CGRectMBS = pdf.MediaBox(1)

// create new PDF
dim c as CGContextMBS = destfile.NewCGPDFDocumentMBS(r,"title","Author","Creator")

// create rotated rectangle
dim nr as new CGRectMBS(0,0,r.Height,r.Width)

// create new page
c.BeginPage nr
c.SaveGState

const pi = 3.14159265

// rotate by 90¬∞
c.RotateCTM pi*1.5

// fix origin
c.TranslateCTM -r.width,0

// draw PDF
c.DrawCGPDFDocument pdf,r,1

// cleanup
c.RestoreGState
c.EndPage
```

```
c = nil

// show in PDF viewer
destfile.Launch
```

Notes: This code is Mac only as it needs CoreGraphics.

16.0.187 How to rotate image with CoreImage?

Plugin Version: all, Platform: macOS.

Answer: Use the code like the one below:
Example:

```
// Rotate image with CoreImage

// load image
dim f as FolderItem = SpecialFolder.Desktop.Child("test.png")
dim image as new CIImageMBS(f)

// rotate 45 degree
dim n as new NSAffineTransformMBS
n.rotateByDegrees(45)

dim TransformFilter as new CIFilterAffineTransformMBS
TransformFilter.inputImage = image
TransformFilter.inputTransform = n

// get result
dim resultImage as CIImageMBS = TransformFilter.outputImage

// for saving to file
dim outputImage as NSImageMBS = resultImage.RenderNSImage(false)

f = SpecialFolder.Desktop.Child("output.png")
dim b as BinaryStream = BinaryStream.Create(f, true)
b.Write outputImage.PNGRepresentation

// as Xojo picture object for display
dim pic as Picture = outputImage.CopyPictureWithMask

Backdrop = pic
```

16.0.188 How to run a 32 bit application on a 64 bit Linux?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Install 32 bit compatibility libraries.
Notes: The package is called ia32-libs for ubuntu (and others).
Some applications need to be run on a 32 bit system as they need some hardware related libraries. Like libUSB or libHID for USB devices.

16.0.189 How to save HTMLViewer to PDF with landscape orientation?

Plugin Version: all, Platform: macOS.

Answer: You can use NSPrintInfoMBS to change the options for PrintToPDFFile function.
Example:

```
// make it landscape
dim n as NSPrintInfoMBS = NSPrintInfoMBS.sharedPrintInfo
n.orientation = n.NSLandscapeOrientation

// save html to file
dim f as FolderItem = SpecialFolder.Desktop.Child("test.pdf")
call HTMLViewer1.PrintToPDFFileMBS(f,10,30,10,30)
```

Notes: You may want to reset options later.
This code is only for Mac OS X.

16.0.190 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: With NSTextViewMBS you can use this code to save to RTFD:
Example:

```
// save text as RTFD including image attachments
dim f as FolderItem = GetSaveFolderItem(FileTypes1.ApplicationRtfd, "test.rtfd")

if f = nil then Return

dim a as NSAttributedStringMBS = textView.textStorage
dim w as NSFileWrapperMBS = a.RTFDFileWrapperFromRange(0, a.length, DocumentAttributes)

dim e as NSErrorMBS
if w.writeToFile(f, e) then
```

```
else
MsgBox e.LocalizedDescription
end if
```

Notes: For TextArea you can query the underlaying NSTextViewMBS object via TextArea.NSTextViewMBS method.

16.0.191 How to save RTFD?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: How to load PDF to htmlviewer on desktop?
Example:

```
Public Sub LoadPDFData(viewer as HTMLViewer, PDFData as string)
Dim base64string As String = EncodeBase64(PDFData)

// remove line endings to make it a big line
base64string = ReplaceLineEndings(base64string, "")

// build data URL
// https://en.wikipedia.org/wiki/Data_URI_scheme
Dim dataURL As String = "data:application/pdf;base64," + base64string

// show in webviewer
HTMLViewer1.LoadURL(dataURL)

// may not work everywhere due to URL length limit
// for Web projects, use WebFile instead!
End Sub
```

Notes: This avoids a temporary file, which may also work.
For Web Apps, please use WebFile.

16.0.192 How to scale a picture proportionally with mask?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

```
Function ProportinalScaledWithMask(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)

// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// check if we have a mask and clear it
dim m as picture = pic.mask(False)
pic.mask = nil

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

if m <>nil then
// restore mask and scale it
pic.mask = m
NewPic.mask.Graphics.DrawPicture m, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height
end if


// return result
Return NewPic
End Function
```

Notes: This version handles mask. As you see we actually have to remove mask in order to copy the picture part correctly.

16.0.193 How to scale a picture proportionally?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: For a proportional scaling, we calculate the new picture size relative to the target maximum size.
Example:

```
Function ProportionalScaled(extends pic as Picture, Width as Integer, Height as Integer) As Picture
// Calculate scale factor

dim faktor as Double = min( Height / Pic.Height, Width / Pic.Width)
```

```
// Calculate new size
dim w as Integer = Pic.Width * faktor
dim h as Integer = Pic.Height * faktor

// create new picture
dim NewPic as new Picture(w,h,32)

// draw picture in the new size
NewPic.Graphics.DrawPicture Pic, 0, 0, w, h, 0, 0, Pic.Width, Pic.Height

// return result
Return NewPic
End Function
```

Notes: This does not handle mask, but you can scale the mask the same way and assign it to the new picture.
(see other FAQ entry with mask)

16.0.194 How to scale/resize a CIImageMBS?

Plugin Version: all, Platform: Windows.

Answer: Use the CIFilterLanczosScaleTransform filter to scale down a picture to a specific size.
Example:

```
Dim pic As Picture = LogoMBS(500)
Dim image As CIImageMBS = CIImageMBS.imageWithPicture(pic)

Dim filter As New CIFilterLanczosScaleTransformMBS

Const targetWidth = 600.0
Const targetHeight = 400.0

Dim scale As Double = targetHeight / image.Extent.Height
Dim aspect As Double = targetWidth / (image.Extent.Width * scale)

filter.inputImage = image
filter.inputScale = scale
filter.inputAspectRatio = aspect

Dim result As Picture = filter.outputImage.RenderPicture

Backdrop = result
```

Notes: This is same code as our scaleTo convenience method.

16.0.195 How to scale/resize a picture?

Plugin Version: all, Platform: Windows.

Answer: There are several ways to scale or resize a picture. The easiest way may be the ScaleMBS function in the Picture class.
Example:

```
dim Original,Scaled as Picture

Original=LogoMBS(500)
Scaled=Original.ScaleMBS(100,100,true)
```

Notes: The plugin ways:
- GraphicsMagick can scale/resize.
- CoreImage scale filter may result in the fastest and best images on Mac OS X 10.4.
- NSImageMBS can scale, but is Mac OS X only.
- CGImageMBS can scale, but is Mac OS X only.
- CIImageMBS can scale, but is Mac OS X only.
- QuickTime Graphics exporter and importer can be connected to scale. (this was used more often a few years ago)
- ImageMagick can scale very nice and crossplatform. But the ImageMagick libraries are big.
- The picture.ScaleMBS function is self written and results in equal output on Mac, Windows and Linux without any additional libraries installed.
- Picture.ScalingMBS does crossplatform scaling with several modes.

with pure Xojo:
- make a new picture and draw the old one with new size inside.

16.0.196 How to search with regex and use unicode codepoints?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can specify unicode characters in search string with backslash x and digits.
Example:

```
dim r as RegExMbs
dim s as string
dim c as Integer
```

```
s="123 √§√√º ABC 456"

r=new RegExMBS
if r.Compile(".√.") then
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if

r=new RegExMBS
if r.Compile(".\xF6.") then // finds √ using Unicode codepoint
c=r.Execute(s,0)
MsgBox str(c)+" "+str(r.Offset(0))+" "+str(r.Offset(1))
// shows: 1 4 10
// 1 for ubound of the offset array
// 4 for 4 bytes before the matched pattern
// 10 for the 10 bytes before the end of the matched pattern
end if
```

16.0.197 How to see if a file is invisible for Mac OS X?

Plugin Version: all, Platform: macOS.

Answer: Try this function:
Example:

```
Function Invisible(F As FolderItem) As Boolean
Dim TIS As TextInputStream
Dim S,All As String
Dim I as Integer
dim g as folderitem

If Left(F.Name,1)="." or not f.visible Then
Return True
End If

g=F.Parent.Child(".hidden")
If g.Exists Then
TIS=g.OpenAsTextFile
if tis<>Nil then
All=TIS.ReadAll
For I=1 to CountFields(All,Chr(11))
S=NthField(All, Chr(11), I)
```

```
If S=F.name Then
Return True
End If
Next
end if
End if
End Function
```

16.0.198 How to set cache size for SQLite or REALSQLDatabase?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You use the pragma cache_size command on the database.
Example:

```
// set cache size to 20000 pages which is about 20 MB for default page size
dim db as REALSQLDatabase
db.SQLExecute "PRAGMA cache_size = 20000"
```

Notes: Default cache size is 2000 pages which is not much.
You get best performance if whole database fits in memory.
At least you should try to have a cache big enough so you can do queries in memory.
You only need to call this pragma command once after you opened the database.

16.0.199 How to set the modified dot in the window?

Plugin Version: all, Platform: macOS.

Answer: Try this declares:
Example:

```
window1.ModifiedMBS=true
```

16.0.200 How to show a PDF file to the user in a Web Application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use a WebHTMLViewer control and load the
Example:

```
dim CurrentFile as WebFile // a property of the WebPage

// define the PDF file
CurrentFile = new WebFile
CurrentFile.Filename = "test.pdf"
CurrentFile.MIMEType = "application/pdf"
CurrentFile.Data = "some pdf data" // MyDynaPDF.GetBuffer

// load into html viewer
HTMLViewer1.URL = CurrentFile.URL
```

Notes: See our Create PDF example for the Xojo Web Edition.

16.0.201 How to show Keyboard Viewer programmatically?

Platform: macOS.

Answer: Use Xojo or AppleScript to launch the KeyboardViewerServer.app.
Example:

```
dim a as new AppleScriptMBS
dim text as string
dim lines(-1) as string

lines.append "set theApplication to ""KeyboardViewerServer"""
lines.append "set thePath to ""/System/Library/Components/KeyboardViewer.component/Contents/Shared-Support/KeyboardViewerServer.app"""
lines.append ""
lines.append "set POSIXPath to ((POSIX file thePath) as string)"
lines.append "tell application ""System Events"" to set isRunning to 0 <(count (application processes whose name is theApplication))"
lines.append "if isRunning then tell application POSIXPath to quit"
lines.append "delay 0.15"
lines.append ""
lines.append "ignoring application responses"
lines.append " tell application POSIXPath to run"
lines.append "end ignoring"

text=join(lines,EndOfLine.macintosh)

a.Compile text
a.Execute
```

Notes: AppleScript code:

set theApplication to ”KeyboardViewerServer”
set thePath to ”/System/Library/Components/KeyboardViewer.component/Contents/SharedSupport/KeyboardViewerServer.app”

set POSIXPath to ((POSIX file thePath) as string)
tell application ”System Events” to set isRunning to 0 <(count (application processes whose name is theApplication))
if isRunning then tell application POSIXPath to quit
delay 0.15

ignoring application responses
tell application POSIXPath to run
end ignoring

16.0.202 How to show the mouse cursor on Mac?

Plugin Version: all, Platform: macOS.

Answer: Try this declare:
Example:

```
Declare Sub ShowCursor Lib ”Carbon” ()

ShowCursor
```

Notes: The MBS Plugin has this function and supports it on Windows, too.

16.0.203 How to shutdown a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent(”FNDR”,”shut”,”MACS”)
if not ae.send then
msgBox ”The computer couldn’t be shutdown.”
end if
```

Notes: Or toolbox call (Attention: This method will stop the computer immediataly: No document asked to be saved, all applications quitting without knowing).

```
Declare Sub ShutDwnPower Lib "Carbon" ()
ShutDwnPower
```

16.0.204 How to sleep a Mac?

Plugin Version: all, Platform: macOS.

Answer: Ask the Finder via Apple Events:
Example:

```
dim ae as appleevent
ae=newappleEvent("FNDR","slep","MACS")
if not ae.send then
msgBox "The computer doesn't want to sleep."
end if
```

16.0.205 How to speed up rasterizer for displaying PDFs with DynaPDF?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Here a few speed tips:
Notes:

- Use the DynaPDFRasterizerMBS function instead of our render functions.
- Reuse DynaPDFRasterizerMBS as long as the target picture size doesn't change.
- Import only the PDF pages you want to display.
- Let DynaPDF do zooming, rotating or other effects instead of you change it.

16.0.206 How to use PDFLib in my RB application?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The PDFlib plugin was discontinued in favor of our DynaPDF plugin.
Notes: If you need help to move, please contact us.

16.0.207 How to use quotes in a string?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Just double them.
Example:

```
msgbox "This String contains ""quotes""."
```

16.0.208 How to use Sybase in Web App?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use our MBS Xojo SQL Plugin to connect to a Sybase Database in your web application.
Notes: If you see db.Connect giving the error message "cs_ctx_alloc ->CS_MEM_ERROR", than some things are not setup right for Sybase.
The Apache process may not have all the SYBASE environment variables being set when the CGI was launched.

Adding these lines to /etc/httpd/conf/httpd.conf stopped the faux memory errors for us:

```
SetEnv LD_LIBRARY_PATH /opt/sybase/OCS-15_0/lib:/opt/sybase/OCS-15_0/lib3p64:/opt/sybase/OCS-15_0/lib3p:
SetEnv SYBROOT /opt/sybase
SetEnv SYBASE_OCS /opt/sybase
SetEnv SYBASE /opt/sybase
```

16.0.209 How to use the Application Support folder?

Plugin Version: all, Platform: macOS.

Answer:

I was saving a registration code for an app to the Preferencefolder.
People on the list have suggested that it would be better in
the ApplicationSupportFolder. How do I save the file called CWWPrefs
into that folder using MBS?

I have checked for examples and the docs but can't see how to apply it

```
//f = SpecialFolder.Preferences.child("CWWPrefs")
f = ApplicationSupportFolderMBS(-32768)
```

Example:

```
dim folder,file as FolderItem

folder = createApplicationSupportFolderMBS(-32763)

if folder=nil then
// Some very old Mac OS Versions may not support it
// or the plugin may fail for any reason
folder=SpecialFolder.Preferences
end if

file=folder.Child("CWWPrefs")

MsgBox file.NativePath
```

Notes:

You may not be able to write there with a normal user account!

16.0.210 How to use the IOPMCopyScheduledPowerEvents function in Xojo?

Plugin Version: all, Platform: macOS.

Answer: You can use the following code which does this using the SoftDeclareMBS class.
Example:

```
Sub Open()
dim c as CFDateMBS
dim t as CFAbsoluteTimeMBS

// get current date
c=NewCFDateMBS

// in absolute time (seconds since x)
t=c.AbsoluteTime

// add 600 seconds (= 10 Minutes)
t.Value=t.Value+600

// Make a Date from it
c=t.Date

// Schedule the event
// 0 on success
// E00002C1 for missing root rights
```

```
Title=hex(schedulePowerEvent(c, "wake"))

// Just for information, display the scheduled stuff
CFShowMBS CopyScheduledPowerEvents
End Sub

Function CopyScheduledPowerEvents() As cfarrayMBS
dim s as SoftDeclareMBS
dim m as MemoryBlock

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMCopyScheduledPowerEvents") then
if s.CallFunction(0,nil) then
Return NewCFArrayMBSHandle(s.Result,true)
else
MsgBox "Failed to Call IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOPMCopyScheduledPowerEvents."
end if
else
MsgBox "Failed to load IOKit."
end if

Return nil
End Function

Function SchedulePowerEvent(time_to_wake as CFDateMBS, Type as CFStringMBS) as Integer
dim s as SoftDeclareMBS
dim m as MemoryBlock

'/*
'* Types of power event
'* These are potential arguments to IOPMSchedulePowerEvent().
'* These are all potential values of the kIOPMPowerEventTypeKey in the CFDictionaries
'* returned by IOPMCopyScheduledPowerEvents().
'*/
'/*!
'@define kIOPMAutoWake
'@abstract Value for scheduled wake from sleep.
'*/
'#define kIOPMAutoWake "wake"
'
'/*!
'@define kIOPMAutoPowerOn
'@abstract Value for scheduled power on from off state.
```

```
'*/
'#define kIOPMAutoPowerOn "poweron"
'
'/*!
'@define kIOPMAutoWakeOrPowerOn
'@abstract Value for scheduled wake from sleep, or power on. The system will either wake OR
'power on, whichever is necessary.
'*/
'
'#define kIOPMAutoWakeOrPowerOn "wakepoweron"
'/*!
'@define kIOPMAutoSleep
'@abstract Value for scheduled sleep.
'*/
'
'#define kIOPMAutoSleep "sleep"
'/*!
'@define kIOPMAutoShutdown
'@abstract Value for scheduled shutdown.
'*/
'
'#define kIOPMAutoShutdown "shutdown"

s=new SoftDeclareMBS

if s.LoadLibrary("IOKit.framework") then
if s.LoadFunction("IOPMSchedulePowerEvent") then

m=NewMemoryBlock(12)
m.Long(0)=time_to_wake.handle
m.Long(4)=0 // nil
m.Long(8)=type.Handle

if s.CallFunction(3,m) then
Return s.Result
end if
end if
end if

End Function
```

Notes: Requires Mac OS X and to execute root rights.

16.0.211 How to validate a GUID?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use this function below which uses a regular expression to verify that the string is a valid UUID/GUID:
Example:

```
Function IsGUID(guid as string) As Boolean
dim r as new RegEx

r.SearchPattern = "^(\{ { 0,1 } ( [ 0-9a-fA-F ] ) { 8 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 4 } -( [ 0-9a-fA-F ] ) { 12 } \} { 0,1 } )$ "

Return r.Search(guid)<>nil
End Function
```

Notes: Simply parsing the GUID with CFUUIDMBS does not give the same result as CFUUIDMBS will also take a string like "DDDD".

16.0.212 How to walk a folder hierarchie non recursively?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Use code like this one:
Example:

```
Sub Walk(folder as FolderItem)
dim folders() as FolderItem

folders.Append folder

while UBound(folders)>=0

dim currentFolder as FolderItem = folders.pop

dim c as Integer = currentFolder.Count
for i as Integer = 1 to c
dim item as FolderItem = currentFolder.TrueItem(i)

if item = Nil then
// no permission
elseif item.Visible then // only visible

if item.Directory then
folders.Append item
```

```
else
// work with file here
end if

end if

next

wend
End Sub
```

Notes: As you see we go with a long loop which runs until we don't have more folders to process.
We ignore items we can't access due to permission limits.
And we only work visible items.
If you like, check folderitem.isBundleMBS on item to handle packages and applications better on Mac OS X.

16.0.213 I got this error: PropVal, QDPictMBS.Name (property value), Type mismatch error. Expected CGDataProviderMBS, but got Variant, Name:QDPictMBS

Plugin Version: all, Platform: macOS.

Answer: The plugins MacOSX and MacOSXCF belong together. If you use one part, please also install the other part.
Notes: We splitted the plugin because the Xojo IDE on Windows crashed on compilation.

16.0.214 I registered the MBS Plugins in my application, but later the registration dialog is shown.

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: There are two main reasons.
Notes: 1. you may use the plugin before registering them. This is often the case if you register in a window open event and use the plugin in a control open event.
On the console on Mac OS X or Windows, you may see a message like this "MBS Plugins were used by the application before the RegisterMBSPlugin function was called. Please fix this in your code!".

2. you may have mixed different plugin versions which are not compatible.
In this case you can see a message "Internal plugin registration error." on the console on Mac OS X. Newer plugins may show a message dialog reporting this. Older version simply think they are not registered.

If the installer just merges old and new applications, users may have libraries of older and newer plugin versions in the libs folder. If your application loads the wrong version, the registration fails.

If you use remote debugging, make sure you clear the tempory files there, too. Otherwise you may have old DLLs on your hard disc which may disturb your application.

You can run into issues if you use your registration code on different places of your app. Please register only once in app.open (or app Constructor). If you have several codes, simply call them one after the other.

Also check that you only call RegisterMBSPlugin with valid serial number. If you later call RegisterMBSPlugin with Demo like in example code above, you remove the license.

Next check if you can clear the Xojo caches and that helps. This includes the Xojo Scratch folder and the Plugins & Project caches. Simply locate those folders and delete them. For Windows look in hidden AppData folder in your user folder. For Mac, please check
textasciitilde /Library/Caches and your temp folders.

Finally make sure you use the right serial number. Not an older one or a misspelled one.

16.0.215 I want to accept Drag & Drop from iTunes

Plugin Version: all, Platform: macOS.

Answer: You need to accept AcceptMacDataDrop "itun" and Handle the DropObject.
Example:

```
Sub Open()
window1.AcceptMacDataDrop "itun"
End Sub

Sub DropObject(obj As DragItem)
dim s as string
dim f as folderItem
dim d as CFDictionaryMBS
dim o as CFObjectMBS
dim key as CFStringMBS
dim dl as CFDictionaryListMBS
dim i,c as Integer
dim u as CFURLMBS
dim file as FolderItem

if obj.MacDataAvailable("itun") then
s = obj.MacData("itun")
```

```
// Parse XML
o=NewCFObjectMBSFromXML(NewCFBinaryDataMBSStr(s))

// Make dictionary
if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

// get Tracks Dictionary
key=NewCFStringMBS("Tracks")
o=d.Value(key)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)
dl=d.List

// Walk over all entries in the Tracks dictionary
c=dl.Count-1
for i=0 to c
o=dl.Value(i)

if o isa CFDictionaryMBS then
d=CFDictionaryMBS(o)

key=NewCFStringMBS("Location")
o=d.Value(key)
if o isa CFStringMBS then
u=NewCFURLMBSCFStringMBS(CFStringMBS(o),nil)

file=u.file
if file<>nil then
MsgBox file.NativePath
end if
end if
end if
next
end if
end if
end if
End Sub
```

Notes: The code above inside a window on Xojo 5.5 with MBS Plugin 5.3 will do it nice and show the paths.

16.0.216 I'm drawing into a listbox but don't see something.

Plugin Version: all.

Answer: If you draw this in a listbox cellbackground, you need to draw on the correct position
Example:

```
Function CellBackgroundPaint(g As Graphics, row as Integer, column as Integer) As Boolean
dim f as FolderItem
f=SpecialFolder.Desktop
f.DrawWideIconMBS(g,listbox1.left,listbox1.top+row*20,16)
Return true
End Function
```

Notes: Try this in a listbox. The Graphics object there has a cliping and an offset which the plugin doesn't know about.

16.0.217 I'm searching for a method or so to move a window from position x.y to somewhere else on the screen.

Platform: macOS.

Answer:

The code I produced in RB isn't smooth enough. Is there a call in MBS, if not, can it be done? The speed of it has to be like the show of a DrawerWindow.

Try the declare below for Carbon. With WindowLib it will work on Mac OS 8.5 and newer.
Notes:

See Window.Transition functions.

16.0.218 If I use one of your plug-ins under windows, would this then impose the use of dll after compilation or my would my compiled soft still be a stand-alone single file software?

Platforms: macOS, Linux, Windows.

Answer: Stand alone.
Notes: Xojo compiles all used plugins into the application binary.
Some plugin parts need external dlls but you will find that in the documentation. (e.g. pdflib for some classes)

16.0.219 Is the fn key on a powerbook keyboard down?

Plugin Version: all, Platform: macOS.

Answer: I am unable to figure out how or if it is possible to detect if the fn key is down on a powerbook keyboard. Is it possible?
Example:

```
' Window.Open Event of a blank project:

dim i as Integer

for i=0 to 127
if keyboard.asynckeydown(i) then
title=str(i) // found
return
end if
next
title="" // not found
```

Notes: This test application shows the keycode (decimal) 63 for the fn key.

16.0.220 Is there a case sensitive Dictionary?

Plugin Version: all.

Answer: The MBS Plugin has several classes which can work as a replacement.
Notes: First you could use VariantToVariantHashMapMBS or VariantToVariantOrderedMapMBS.
If you know that all keys are Strings or Integers only, you can use the specialized classes which are a little bit faster due to avoiding variants:

IntegerToIntegerHashMapMBS class
IntegerToIntegerOrderedMapMBS class
IntegerToStringHashMapMBS class
IntegerToStringOrderedMapMBS class
IntegerToVariantHashMapMBS class
IntegerToVariantOrderedMapMBS class
StringToStringHashMapMBS class
StringToStringOrderedMapMBS class
StringToVariantHashMapMBS class
StringToVariantOrderedMapMBS class

16.0.221 Is there a way to use the MBS plugin to get only the visible item and folder count on a volume?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can use the DirectorySizeMBS class for this as in the example below:
Example:

```
dim d as DirectorySizeMBS

d=new DirectorySizeMBS

// volume(1) as my boot volume is very full
if d.update(volume(1),true,0) then
MsgBox str(d.VisibleItemCount)+" visible items, "+str(d.HiddenItemCount)+" invisible items."
end if
```

Notes: Complete Question: Is there a way to use the MBS plugin to get only the visible item and folder count on a volume? The FileCount and FolderCount properties of VolumeInformationMBS seem to provide the total # of items including invisible items such as .DS_Store and more importantly .Trashes which is causing me a great amount of difficulty during a recursive scan of a volume. I've got a progress bar which uses the total of the filecount and foldercount properties as the maximum value, but my routine needs to filter out all invisible items, as it is creating a catalog of a volume for archiving purposes. Any thoughts how I could get accurate number.

16.0.222 Is there an easy way I can launch the Displays preferences panel?

Plugin Version: all, Platform: macOS.

Answer: Use the code below:
Example:

```
dim error as Integer

error=OpenMacOSXPreferencesPaneMBS("Displays")
if error<>0 then
MsgBox "Failed to launch QuickTime System Preferences panel."
end if
```

16.0.223 List of Windows Error codes?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We have a list of windows error codes on our website.
Notes: http://www.monkeybreadsoftware.de/xojo/winerror.shtml

16.0.224 Midi latency on Windows problem?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: The issue is system related, not a problem with RB or the plugin.
Notes: Two things will adversely affect the timing:

(1) latency of the software synthesizer output driver. The default Windows wavetable synthesizer has considerable latency. I don't know how many milliseconds, but it is noticeable.

(2) latency of the digital audio output driver. Different systems have different drivers for different audio hardware. My Dell laptop has a minimum 15ms latency in the audio driver.

These two things put together were causing a very sluggish MIDI response. I was able to verify these as the culprits by routing MIDI directly out of RB into a sample player, which only introduces the latency of (2) and does not include latency of (1).

I don't know how widely known are these facts, if not then you may want to add this information to the documentation, since Windows programmers using the MIDI plugin may not know those problems, and might mistakenly blame your plugin, as I did :) Sorry about that!

(From Aaron Andrew Hunt)

16.0.225 My Xojo Web App does not launch. Why?

Plugin Version: all, Platform: macOS.

Answer: Here is a list of checks to do for linux apache installations with Xojo or Xojo Web applications:
Notes: Just a list of checks to do for linux apache installations:

- You have 64bit linux? Than you need 32 bit compatibility libraries.
- The folder of your app is writable? Set permissions to 777.
- The cgi script is executable? Set permissions to 755.

- The app file itself is executable? Set permissions to 755.
- You uploaded cgi file as text, so it has unix line endings? (this often gives error ”Premature end of script headers” in apache log)
- You uploaded config.cfg file and made it writable? Set permissions to 666.
- Your apache allows execution of cgi scripts? You enabled cgi for apache and uncommented addhandler command for CGI on a new apache installation?
- You uploaded the app file and libraries as binary files? Upload as text breaks them.
- You did upload the libs folder?
- You don’t have code in app.open, session.open and other events which crashes app right at launch?
- You don”t have a print command in your app.open event? (see feedback case 23817)
- You allowed htaccess file to overwrite permissions?

16.0.226 SQLDatabase not initialized error?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Before you can use SQLDatabaseMBS, it must be initialized.
Example:

```
dim d as new SQLDatabaseMBS
```

Notes: This happens normally when you use ”new SQLDatabaseMBS”.
But if you just have a SQLConnectionMBS and get a recordset there, the initialization may not have happend, yet.
So please simply add a line ”dim d as new SQLDatabaseMBS” to your app.open code after registration, so the plugin part can initialize and late provide recordsets.

16.0.227 Textconverter returns only the first x characters. Why?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Some older Xojo versions limit the Textconverter to around 1024 characters in input and output.
This should be fixed with RB5.
Notes:

Xojo seems not to support Textconverters at all on Windows.

16.0.228 The type translation between CoreFoundation/Foundation and Xojo data types.

Plugin Version: all, Platform: macOS.

Answer: The plugin does conversion between Cocoa/Carbon data types and native Xojo data types. The following list help you knowing what the current plugins support:
Notes: Cocoa NSObject to Variant:

nil ->nil
NSDictionary ->Dictionary
NSData ->MemoryBlock
NSString ->String
NSAttributedString ->NSAttributedStringMBS
NSDate ->Date
NSNumber ->double/integer/Int64/UInt64/UInt32/Boolean
NSURL ->String
NSValue with NSRect ->NSRectMBS
NSValue with NSPoint ->NSPointMBS
NSValue with NSSize ->NSSizeMBS
NSValue with NSRange ->NSRangeMBS
NSValue with QTTime ->QTTimeMBS
NSValue with QTTimeRange ->QTTimeRangeMBS
NSArray ->Array of Variant
QuartzFilter ->QuartzFilterMBS

- ->*MBS

Variant to Cocoa NSObject:

nil ->nil
Dictionary ->NSDictionary
Boolean ->NSNumber
Integer ->NSNumber
Color ->NSColor
Int64 ->NSNumber
Single ->NSNumber
Double ->NSNumber
Date ->NSDate
MemoryBlock ->NSData
String ->NSString
NSImageMBS ->NSImage
NSAttributedStringMBS ->NSAttributedString
NSColorMBS ->NSColor
NSRectMBS ->NSValue with NSRect
NSSizeMBS ->NSValue with NSSize

NSPointMBS ->NSValue with NSPoint
NSRangeMBS ->NSValue with NSRange
NSBurnMBS ->NSBurn
NSViewMBS ->NSView
NSFontMBS ->NSFont
NSParagraphStyleMBS ->NSParagraphStyle
NSAttributedStringMBS ->NSAttributedString
WebPolicyDelegateMBS ->WebPolicyDelegate
WebUIDelegateMBS ->WebUIDelegate
WebFrameLoadDelegateMBS ->WebFrameLoadDelegate
WebResourceLoadDelegateMBS ->WebResourceLoadDelegate
NSIndexSetMBS ->NSIndexSet
QTTimeMBS ->QTTime
QTTimeRangeMBS ->QTTimeRange
Array of Variant ->NSArray
Array of String ->NSArray
CFStringMBS ->NSString
CFNumberMBS ->NSNumber
CFDataMBS ->NSData
CFURLMBS ->NSURL
CFArrayMBS ->NSArray
CFDictionaryMBS ->NSDictionary
CFBinaryDataMBS ->NSDate

Carbon CFTypeRef to Variant:

CFDictionaryRef ->Dictionary
CFStringRef ->String
CFDataRef ->String
CFURL ->String
CFNumber ->Integer/Double/Int64
CFArray ->Array
CFDate ->date
nil ->nil
CGColorSpace ->CGColorSpaceMBS
CGColor ->CGColorMBS
CGImage ->CGImageMBS
CF* ->CF*MBS

Variant to Carbon CFTypeRef:

Dictionary ->CFDictionaryRef
Boolean ->CFBooleanRef
Color ->CFNumberRef
Integer ->CFNumberRef

Int64 ->CFNumberRef
Single ->CFNumberRef
Double ->CFNumberRef
String ->CFStringRef
Color ->CGColorRef
Date ->CFDateRef
nil ->nil
Memoryblock ->CFDataRef
FolderItem ->CFURLRef
Dictionary ->CFDictionaryRef
Array of Variant/String/Date/Double/Single/Int64/Integer ->CFArray
CGRectMBS ->CGRect as CFDataRef
CGSizeMBS ->CGSize as CFDataRef
CGPointMBS ->CGPoint as CFDataRef
CGColorMBS ->CGColor
CGColorSpaceMBS ->CGColorSpace
CGImageMBS ->CGImage
CGDataConsumerMBS ->CGDataConsumer
CGDataProviderMBS ->CGDataProvider
CF*MBS ->CF*

Strings without encodings should be put into dictionaries as memoryblocks.

16.0.229 Uploaded my web app with FTP, but it does not run on the server!

Plugin Version: all, Platform: Windows.

Answer: If you see errors like a simple "Segmentation Fault" on Linux or some other wired errors, you may want to check your FTP upload mode. It must be binary for web apps. ASCII mode corrupts the application.

16.0.230 What classes to use for hotkeys?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use CarbonHotKeyMBS class on Mac and WindowsKeyFilterMBS on Windows.
Notes: CarbonHotKeyMBS will also work fine in Cocoa apps.

16.0.231 What do I need for Linux to get picture functions working?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: In order to get our plugins working on Linux systems without GUI, the plugin loads graphics

libraries dynamically.
Notes: To get it working, the plugin tries to load gtk with this paths:

- libgtk-x11-2.0.so”
- libgtk-x11-2.0.so.0”
- /usr/lib/libgtk-x11-2.0.so”
- /usr/lib32/libgtk-x11-2.0.so”
- /usr/lib/libgtk-x11-2.0.so.0”
- /usr/lib32/libgtk-x11-2.0.so.0”

gdk is loaded with this paths:

- libgdk-x11-2.0.so”
- libgdk-x11-2.0.so.0”
- /usr/lib/libgdk-x11-2.0.so”
- /usr/lib32/libgdk-x11-2.0.so”
- /usr/lib/libgdk-x11-2.0.so.0”
- /usr/lib32/libgdk-x11-2.0.so.0”

For the paths without explicit path, the system will search in /lib, /usr/lib and all directories in the LD_LIBRARY_PATH environment variable.

16.0.232 What does the NAN code mean?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

16.0.233 What font is used as a ’small font’ in typical Mac OS X apps?

Plugin Version: all, Platform: macOS.

Answer:

Xojo 4.5 has a constant ”SmallSystem” to use for a font name.
For older versions try this code:
Example:

```
Sub GetThemeFont(fontType as Integer, ByRef fontName as String, ByRef fontSize as Integer, ByRef
fontStyle as Integer)
dim err as Integer
dim theFont, theFontSize, theFontStyle as MemoryBlock

const smSystemScript = -1

Declare Function GetThemeFont Lib "Carbon" (inFontID as Integer, inScript as Integer, outFontName
as Ptr, outFontSize as Ptr, outStyle as Ptr) as Integer

theFont = NewMemoryBlock(256) //Str255
theFontSize = NewMemoryBlock(2) //SInt16
theFontStyle = NewMemoryBlock(1) //Style

err = GetThemeFont(fontType, smSystemScript, theFont, theFontSize, theFontStyle)

if err = 0 then
fontName = theFont.PString(0)
fontSize = theFontSize.UShort(0)
fontStyle = theFontStyle.Byte(0)
else
fontName = ""
fontSize = 0
fontStyle = 0
end if
End Sub
```

16.0.234 What is last plugin version to run on Mac OS X 10.4?

Plugin Version: all, Platform: Windows.

Answer: Last Version with 10.4 support is version 15.4.
Notes: With version 15.4 you can build applications for OS X 10.4 and newer.
For Version 16.0 we disabled 10.4 and moved minimum to 10.5. We may be able to enable it again to build a version of 16.x, but may need to charge for this by hour.

16.0.235 What is last plugin version to run on PPC?

Plugin Version: all, Platform: Windows.

Answer: Last Version with PPC is 15.4.
Notes: With version 15.4 you can build PPC applications for OS X 10.4 and newer.
For Version 16.0 we disabled PPC. We may be able to enable it again to build a PPC version of 16.x, but may need to charge for this by hour.

16.0.236 What is last version of the plugins for macOS 32-bit?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use version 23.0 or older.
Notes: We stopped including 32-bit code for macOS in version 23.1.
Please us older versions if you use an old Xojo.

Xojo 2017r3 and newer load our 64-bit plugins.

16.0.237 What is the difference between Timer and WebTimer?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Time is server side and WebTimer client side.
Notes: Timer is the normal timer class in Xojo. It runs on the server. On the side the WebTimer runs on the client. It triggers a request to the server to perform the action. So a WebTimer is good to keep the connection running and the website updated regularly. A timer on the server is good to make regular jobs like starting a database backup every 24 hours.

16.0.238 What is the list of Excel functions?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Below a list of function names known by LibXL.
Notes: LibXL parses the functions and writes tokens to the excel file. So even if Excel can do more functions, we can only accept the ones known by LibXL.

ABS, ABSREF, ACOS, ACOSH, ACTIVE.CELL, ADD.BAR, ADD.COMMAND, ADD.MENU, ADD.TOOLBAR, ADDRESS, AND, APP.TITLE, AREAS, ARGUMENT, ASC, ASIN, ASINH, ATAN, ATAN2, ATANH, AVEDEV, AVERAGE, AVERAGEA, BAHTTEXT, BETADIST, BETAINV, BINOMDIST, BREAK, CALL, CALLER, CANCEL.KEY, CEILING, CELL, CHAR, CHECK.COMMAND, CHIDIST, CHIINV, CHITEST, CHOOSE, CLEAN, CODE, COLUMN, COLUMNS, COMBIN, CONCATENATE, CONFIDENCE, CORREL, COS, COSH, COUNT, COUNTA, COUNTBLANK, COUNTIF, COVAR, CREATE.OBJECT, CRITBINOM, CUSTOM.REPEAT, CUSTOM.UNDO, DATE, DATEDIF, DATESTRING, DATEVALUE, DAVERAGE, DAY, DAYS360, DB, DBCS, DCOUNT, DCOUNTA, DDB, DEGREES, DELETE.BAR, DELETE.COMMAND, DELETE.MENU, DELETE.TOOLBAR, DEREF, DEVSQ, DGET, DIALOG.BOX, DIRECTORY, DMAX, DMIN, DOCUMENTS, DOLLAR, DPRODUCT, DSTDEV, DSTDEVP, DSUM, DVAR, DVARP, ECHO, ELSE, ELSE.IF, ENABLE.COMMAND, ENABLE.TOOL, END.IF, ERROR, ERROR.TYPE, EVALUATE, EVEN, EXACT, EXEC, EXECUTE, EXP, EXPONDIST, FACT, FALSE, FCLOSE, FDIST, FILES, FIND, FINDB, FINV, FISHER, FISHERINV, FIXED, FLOOR, FOPEN, FOR, FOR.CELL, FORECAST,

FORMULA.CONVERT, FPOS, FREAD, FREADLN, FREQUENCY, FSIZE, FTEST, FV, FWRITE, FWRITELN, GAMMADIST, GAMMAINV, GAMMALN, GEOMEAN, GET.BAR, GET.CELL, GET.CHART.ITEM, GET.DEF, GET.DOCUMENT, GET.FORMULA, GET.LINK.INFO, GET.MOVIE, GET.NAME, GET.NOTE, GET.OBJECT, GET.PIVOT.FIELD, GET.PIVOT.ITEM, GET.PIVOT.TABLE, GET.TOOL, GET.TOOLBAR, GET.WINDOW, GET.WORKBOOK, GET.WORKSPACE, GETPIVOTDATA, GOTO, GROUP, GROWTH, HALT, HARMEAN, HELP, HLOOKUP, HOUR, HYPERLINK, HYPGEOMDIST, IF, INDEX, INDIRECT, INFO, INITIATE, INPUT, INT, INTERCEPT, IPMT, IRR, ISBLANK, ISERR, ISERROR, ISLOGICAL, ISNA, ISNONTEXT, ISNUMBER, ISPMT, ISREF, ISTEXT, ISTHAIDIGIT, KURT, LARGE, LAST.ERROR, LEFT, LEFTB, LEN, LENB, LINEST, LINKS, LN, LOG, LOG10, LOGEST, LOGINV, LOGNORMDIST, LOOKUP, LOWER, MATCH, MAX, MAXA, MDETERM, MEDIAN, MID, MIDB, MIN, MINA, MINUTE, MINVERSE, MIRR, MMULT, MOD, MODE, MONTH, MOVIE.COMMAND, N, NA, NAMES, NEGBINOMDIST, NEXT, NORMDIST, NORMINV, NORMSDIST, NORMSINV, NOT, NOTE, NOW, NPER, NPV, NUMBERSTRING, ODD, OFFSET, OPEN.DIALOG, OPTIONS.LISTS.GET, OR, PAUSE, PEARSON, PERCENTILE, PERCENTRANK, PERMUT, PHONETIC, PI, PIVOT.ADD.DATA, PMT, POISSON, POKE, POWER, PPMT, PRESS.TOOL, PROB, PRODUCT, PROPER, PV, QUARTILE, RADIANS, RAND, RANK, RATE, REFTEXT, REGISTER, REGISTER.ID, RELREF, RENAME.COMMAND, REPLACE, REPLACEB, REPT, REQUEST, RESET.TOOLBAR, RESTART, RESULT, RESUME, RETURN, RIGHT, RIGHTB, ROMAN, ROUND, ROUNDBAHTDOWN, ROUNDBAHTUP, ROUNDDOWN, ROUNDUP, ROW, ROWS, RSQ, RTD, SAVE.DIALOG, SAVE.TOOLBAR, SCENARIO.GET, SEARCH, SEARCHB, SECOND, SELECTION, SERIES, SET.NAME, SET.VALUE, SHOW.BAR, SIGN, SIN, SINH, SKEW, SLN, SLOPE, SMALL, SPELLING.CHECK, SQRT, STANDARDIZE, STDEV, STDEVA, STDEVP, STDEVPA, STEP, STEYX, SUBSTITUTE, SUBTOTAL, SUM, SUMIF, SUMPRODUCT, SUMSQ, SUMX2MY2, SUMX2PY2, SUMXMY2, SYD, T, TAN, TANH, TDIST, TERMINATE, TEXT, TEXT.BOX, TEXTREF, THAIDAYOFWEEK, THAIDIGIT, THAIMONTHOFYEAR, THAINUMSOUND, THAINUMSTRING, THAISTRINGLENGTH, THAIYEAR, TIME, TIMEVALUE, TINV, TODAY, TRANSPOSE, TREND, TRIM, TRIMMEAN, TRUE, TRUNC, TTEST, TYPE, UNREGISTER, UPPER, USDOLLAR, USERDEFINED, VALUE, VAR, VARA, VARP, VARPA, VDB, VIEW.GET, VLOOKUP, VOLATILE, WEEKDAY, WEIBULL, WHILE, WINDOW.TITLE, WINDOWS, YEAR and ZTEST.

16.0.239 What is the replacement for PluginMBS?

Plugin Version: all, Platform: macOS.

Answer: Use the SoftDeclareMBS class to load libraries dynamically.

16.0.240 What to do on Xojo reporting a conflict?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

I get an error like ”This item conflicts with another item of the same name” when using one of the plugin functions.

Xojo just wants to tell you that you dropped something in the plugins folder what is not a plugin.
Notes:

Some users dropped the examples, the documentation or other files into the plugins folder. Don't do it.

16.0.241 What to do with a NSImageCacheException?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You need to add exception handlers for NSExceptionMBS in order to catch this exception.
Notes: You may also add code to write the stack of the exception into a log file for later locating the error source.

A NSImage has several image representations in memory. So basicly you pass in the base image and for whatever size an image is needed, the NSImage class will create a cache image representation of the requested size so on the next query it can use that cache for the same requested size.

16.0.242 What to do with MySQL Error 2014?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: You can get this error on MySQL if you have a recordset open while you create another one.

16.0.243 What to do with SQL Plugin reporting Malformed string as error?

Plugin Version: all, Platform: macOS.

Answer: Please make sure the table and/or database fields have a text encoding set.
Notes: For Firebird our plugin tries to use UTF-8 encoding if possible and to correctly convert between various tables, the tables and their fields need to have a text encoding defined.
e.g. if the text field in the table is windows-1252 and the other ISO 8859-5, then the Firebird database can convert them to UTF-8 and deliver texts to the plugin.
If encoding is set to none, it may get confused for non-ascii text.

16.0.244 Where is CGGetActiveDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetActiveDisplayList.

16.0.245 Where is CGGetDisplaysWithPointMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithPoint.

16.0.246 Where is CGGetDisplaysWithRectMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetDisplaysWithRect.

16.0.247 Where is CGGetOnlineDisplayListMBS?

Plugin Version: all, Platform: Windows.

Answer: This is now CGDisplayMBS.GetOnlineDisplayList.

16.0.248 Where is GetObjectClassNameMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Please use this replacement method:
Example:

```
Function GetObjectClassNameMBS(o as Object) As string
dim t as Introspection.TypeInfo = Introspection.GetType(o)
Return t.FullName
End Function
```

Notes: GetObjectClassNameMBS was removed from the plugins.

16.0.249 Where is NetworkAvailableMBS?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: We removed NetworkAvailableMBS some versions ago. It was not working right and basicly it's not useful. If you want to check whether you have a network, than do a DNS resolve:
Example:

```
// two independend domain names
const domain1 = "www.google.com"
const domain2 = "www.macsw.de"

// resolve IPs
dim ip1 as string = DNSNameToAddressMBS(Domain1)
dim ip2 as string = DNSNameToAddressMBS(Domain2)

// if we got IPs and not the same IPs (error/login pages)
if len(ip1)=0 or len(ip2)=0 or ip1=ip2 then
MsgBox "no connection"
else
MsgBox "have connection"
end if
```

Notes: This way you can detect whether you got something from DNS. And you can make sure that a DNS redirection to a login page won't catch you.

16.0.250 Where is StringHeight function in DynaPDF?

Plugin Version: all, Platform: Windows.

Answer: Use the function GetFTextHeight or GetFTextHeightEx.
Notes: Be aware that GetFTextHeight works with format commands and you may want to escape your text if you don't use them.

16.0.251 Where is XLSDocumentMBS class?

Plugin Version: all, Platform: macOS.

Answer: This class has been removed in favor of XLBookMBS class.
Notes: This classes have been removed XLSCellMBS, XLSDocumentMBS, XLSFormatRecordMBS, XLSMergedCellsMBS, XLSRowMBS and XLSSheetMBS.

16.0.252 Where to get information about file formats?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

Please visit this web page:
http://www.wotsit.org

16.0.253 Where to register creator code for my application?

Plugin Version: all, Platform: macOS.

Answer:

Register at Apple:
http://developer.apple.com/dev/cftype/information.html

16.0.254 Which Mac OS X frameworks are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some frameworks from Mac OS X do not support 32 bit applications, so we can't provide plugins for Xojo until 64bit target is available.
Notes: For Mac OS X 10.8:

- Accounts
- EventKit
- GLKit
- Social

and in 10.9:

- Accounts
- AVKit
- EventKit
- GameController
- GLKit
- MapKit
- MediaLibrary
- Social
- SpriteKit

In general Apple makes all new frameworks being 64 bit only.

16.0.255 Which plugins are 64bit only?

Plugin Version: all, Platform: macOS.

Answer: Some of our plugins work only in 64 bit modes as operation systems do not provide 32 bit code.
Notes: This effects currently: EventKit, Accounts, Social frameworks from Apple and our matching plugins.

16.0.256 Why application doesn't launch because of a missing ddraw.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install DirectX from Microsoft on your Windows.

16.0.257 Why application doesn't launch because of a missing shlwapi.dll!?

Plugin Version: all, Platform: Windows.

Answer: Some RB versions require that you install the Internet Explorer from Microsoft on your Windows.
Notes: This bug is for several older Windows 95 editions.

16.0.258 Why do I hear a beep on keydown?

Plugin Version: all, Platform: Windows.

Answer: When the user presses a key, RB goes through all keydown event handlers till on returns true.
Notes: If no keydown event handler returns true for the key, a beep is performed.

16.0.259 Why does folderitem.item return nil?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer: Because Xojo fails to make a folderitem for you. Reason may be an alias file which can't be resolved or simply that you don't have enough access rights to read the folder content.
Notes: A more rarely reason is that the directory changed and the file with the given index or name does no longer exist.

16.0.260 Why doesn't showurl work?

Plugin Version: all, Platforms: macOS, Linux, Windows.

Answer:

There are three main reasons:

1. showurl is not supported by Xojo in 68k applications.
2. there is now application defined for the protocol (e.g. http) in the Internet Control panel.
3. You don't have Internet Config installed.

You can use the InternetConfigMBS class to check for this stuff.

16.0.261 Why don't the picture functions not work on Linux?

Plugin Version: all, Platform: macOS.

Answer: Please make sure libcairo is installed.
Notes: For accessing pictures on Linux, the MBS Plugin relays on the cairo library.
Please install the package if you don't have it already.
Our plugin looks for library called libcairo.so or libcairo.so.2.

16.0.262 Why have I no values in my chart?

Plugin Version: all, Platforms: macOS, Windows.

Answer: You have no data points visible, there may be several reasons:
Notes: For example one of the data values may be infinite or invalid.
Or the scaling may be out of range, so you simply see nothing.

16.0.263 Will application size increase with using plugins?

Plugin Version: all, Platform: Windows.

Answer: All plugins used by your application will be included in the application.
Notes: If you use no plugins, your application will not change size.
And if you use one class from the plugins, your application size will increase by a few kilobytes.
The documentation of the plugins include a list of all plugin parts and their sizes for the different platforms.

16.0.264 XLS: Custom format string guidelines

Plugin Version: all, Platform: macOS.

Answer: You have to download the source code and compile a static version of the library.
Notes: Up to four sections of format codes can be specified. The format codes, separated by semicolons, define the formats for positive numbers, negative numbers, zero values, and text, in that order. If only two sections are specified, the first is used for positive numbers and zeros, and the second is used for negative numbers. If only one section is specified, it is used for all numbers. Four sections example:

#,###.00_); [Red] (#,###.00);0.00;"sales "@

The following table describes the different symbols that are available for use in custom number formats.

Specify colors

To set the text color for a section of the format, type the name of one of the following eight colors in square brackets in the section. The color code must be the first item in the section.

Instead of using the name of the color, the color index can be used, like this [Color3] for Red. Valid numeric indexes for color range from 1 to 56, which reference by index to the legacy color palette.
Specify conditions

To set number formats that will be applied only if a number meets a specified condition, enclose the condition in square brackets. The condition consists of a comparison operator and a value. Comparison operators include: = Equal to; >Greater than; <Less than; >= Greater than or equal to, <= Less than or equal to, and <>Not equal to. For example, the following format displays numbers that are less than or equal to 100 in a red font and numbers that are greater than 100 in a blue font.
[Red] [<=100] ; [Blue] [>100]
If the cell value does not meet any of the criteria, then pound signs ("#") are displayed across the width of the cell.
Dates and times

Examples

16.0.265 Xojo doesn't work with your plugins on Windows 98.

Plugin Version: all, Platform: Windows.

Answer: Please upgrade your Windows version.

16.0.266 Xojo or my RB application itself crashes on launch on Mac OS Classic. Why?

Plugin Version: all.

Answer:

You may check if the application has enough memory to be loaded.
RB should have on Mac OS Classic more than 20 MB of RAM.
I prefered to use 50 MB and for an application a 10 MB partition is a good way to start.

Parameter	Description
x	The x value of the data point. For an enumerated x-axis (see Axis.setLabels on what is an enumerated axis), the first data point is 0, and the nth data point is (n-1).
xLabel	The bottom x-axis label of the data point.
x2Label	The top x-axis label of the data point.
value	The value of the data point.
accValue	The sum of values of all data points that are in the same x position and same data group as the current data point, and with data set number less than or equal to the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
totalValue	The sum of values of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
percent	The percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
accPercent	The accumulated percentage of the data point based on the total value of all data points that are in the same x position and same data group as the current data point. This is useful for stacked charts, such as stacked bar chart and stacked area chart.
gpercent	The percentage of the data point based on the total value of all data points in a layer.
dataSet	The data set number to which the data point belongs. The first data set is 0. The nth data set is (n-1).
dataSetName	The name of the data set to which the data point belongs.
dataItem	The data point number within the data set. The first data point is 0. The nth data point is (n-1).
dataGroup	The data group number to which the data point belongs. The first data group is 0. The nth data group is (n-1).
dataGroupName	The name of the data group to which the data point belongs.
layerId	The layer number to which the data point belongs. The first layer is 0. The nth layer is (n-1).
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by data set number. The Pth data set corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth data set corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
zx	The symbol scale in the x dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
zy	The symbol scale in the y dimension. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.
z	The symbol scale without distinguishing the dimension to use. Applicable for layers with symbol scales set by LineLayer.setSymbolScale.

Parameter	Description
slope	The slope of the trend line.
intercept	The y-intercept of the trend line.
corr	The correlation coefficient in linear regression analysis.
stderr	The standard error in linear regression analysis.

Parameter	Description
top	The value of the top edge of the box-whisker symbol.
bottom	The value of the bottom edge of the box-whisker symbol.
max	The value of the maximum mark of the box-whisker symbol.
min	The value of the minimum mark of the box-whisker symbol.
med	The value of the median mark of the box-whisker symbol.

Parameter	Description
high	The high value.
low	The low value.
open	The open value.
close	The close value.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
radius	The radial value of the data point.
value	Same as { radius } . See above.
angle	The angular value of the data point.
x	Same as { angle } . See above.
label	The angular label of the data point.
xLabel	Same as { label } . See above.
name	The name of the layer to which the data point belongs.
dataSetName	Same as { name } . See above.
i	The data point number. The first data point is 0. The nth data point is (n-1).
dataItem	Same as { i } . See above.
z	The symbol scale. Applicable for layers with symbol scales set by PolarLayer.setSymbolScale.
fieldN	The (N + 1)th extra field. For example, { field0 } means the first extra field. An extra field is an array of custom elements added using Layer.addExtraField, Layer.addExtraField2, BaseChart.addExtraField or BaseChart.addExtraField2.

diFieldN	Same as fieldN. See above.
dsFieldN	Similar to fieldN, except that dsFieldN means the extra field is indexed by layer index. The Pth layer corresponds to the Pth element of the extra field.
dsdiFieldN	Similar to fieldN, except that dsdiFieldN means the extra fields are indexed by both the data set number and data point number. The Pth data item of the Qth layer corresponds to the Pth element of the (N + Q)th extra field.

Parameter	Description
dir	The direction of the vector.
len	The length of the vector.

Parameter	Description
value	The axis value at the tick position.
label	The axis label at the tick position.

Parameter	Description
[param]	The name of the parameter
[a]	If this field a number, it specifies the number of decimal places (digits to the right of the decimal point).

[b] The thousand separator. Should be a non-alphanumeric character (not 0-9, A-Z, a-z). Use ' textasciitilde ' for no thousand separator. The default is ' textasciitilde ', which can be modified using BaseChart.setNumberFormat.

[c] The decimal point character. The default is '.', which can be modified using BaseChart.setNumberFormat.

[d] The negative sign character. Use ' textasciitilde ' for no negative sign character. The default is '-', which can be modified using BaseChart.setNumberFormat.

Parameter	Description
yyyy	The year in 4 digits (e.g. 2002)
yyy	The year showing only the least significant 3 digits (e.g. 002 for the year 2002)
yy	The year showing only the least significant 2 digits (e.g. 02 for the year 2002)
y	The year showing only the least significant 1 digits (e.g. 2 for the year 2002)
mmm	The month formatted as its name. The default is to use the first 3 characters of the english month name (Jan, Feb, Mar ...). The names can be configured using BaseChart.setMonthNames.
mm	The month formatted as 2 digits from 01 - 12, adding leading zero if necessary.
m	The month formatted using the minimum number of digits from 1 - 12.
MMM	The first 3 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
MM	The first 2 characters of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
M	The first character of the month name converted to upper case. The names can be configured using BaseChart.setMonthNames.
dd	The day of month formatted as 2 digits from 01 - 31, adding leading zero if necessary.
d	The day of month formatted using the minimum number of digits from 1 - 31.
w	The name of the day of week. The default is to use the first 3 characters of the english day of week name (Sun, Mon, Tue ...). The names can be configured using BaseChart.setWeekDayNames.
hh	The hour of day formatted as 2 digits, adding leading zero if necessary. The 2 digits will be 00 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
h	The hour of day formatted using the minimum number of digits. The digits will be 0 - 23 if the 'a' option (see below) is not specified, otherwise it will be 01 - 12.
nn	The minute formatted as 2 digits from 00 - 59, adding leading zero if necessary.
n	The minute formatted using the minimum number of digits from 00 - 59.
ss	The second formatted as 2 digits from 00 - 59, adding leading zero if necessary.
s	The second formatted using the minimum number of digits from 00 - 59.
a	Display either 'am' or 'pm', depending on whether the time is in the morning or afternoon. The text 'am' and 'pm' can be modified using BaseChart.setAMPM.

Shape Id	Value	Description
SquareShape	1	Square shape. See (1, 1) above.
DiamondShape	2	Diamond shape. See (2, 1) above.
TriangleShape	3	Triangle shape pointing upwards. See (3, 1) above.
RightTriangleShape	4	Triangle shape pointing rightwards. See (4, 1) above.
LeftTriangleShape	5	Triangle shape pointing leftwards. See (5, 1) above.
InvertedTriangleShape	6	Triangle shape pointing downwards. See (1, 2) above.
CircleShape	7	Circle shape. See (2, 2) above.
StarShape	[Method]	Star shapes of various points. See (2, 3), (2, 4), (2, 5), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5) above for stars with 3 to 10 points.
PolygonShape	[Method]	Polygon shapes symmetrical about a vertical axis with a vertex at the top center position. See (4, 1), (4, 3), (4, 5), (5, 1) for polygons of 5 to 8 sides.
Polygon2Shape	[Method]	Polygon shapes symmetrical about a vertical axis but without any vertex at the top center position. See (4, 2), (4, 4) for polygons of 5 and 6 sides.
CrossShape	[Method]	'+' shapes. See (5, 2), (5, 3), (5, 4), (5, 5), (6, 1), (6, 2), (6. 3) for '+' shape with arm width of 0.1 - 0.7.
Cross2Shape	[Method]	'X' shapes. See (6, 4), (6, 5), (7, 1), (7, 2), (7, 3), (7, 4), (7, 5) for 'X' shapes with arm width of 0.1 - 0.7.

langEnglish	0	Roman script
langFrench	1	Roman script
langGerman	2	Roman script
langItalian	3	Roman script
langDutch	4	Roman script
langSwedish	5	Roman script
langSpanish	6	Roman script
langDanish	7	Roman script
langPortuguese	8	Roman script
langNorwegian	9	Roman script
langHebrew	10	Hebrew script
langJapanese	11	Japanese script
langArabic	12	Arabic script
langFinnish	13	Roman script
langGreek	14	Greek script using smRoman script code
langIcelandic	15	modified smRoman/Icelandic script
langMaltese	16	Roman script
langTurkish	17	modified smRoman/Turkish script
langCroatian	18	modified smRoman/Croatian script
langTradChinese	19	Chinese (Mandarin) in traditional characters
langUrdu	20	Arabic script
langHindi	21	Devanagari script
langThai	22	Thai script
langKorean	23	Korean script

Nan	Meaning
1	Invalid square root (negative number, usually)
2	Invalid addition (indeterminate such as infinity + (-infinity))
4	Invalid division (indeterminate such as 0/0)
8	Invalid multiplication (indeterminate such as 0*infinity)
9	Invalid modulo such as (a mod 0)
17	Try to convert invalid string to a number like val(”x7”)
33	Invalid argument in a trig function
34	Invalid argument in an inverse trig function
36	Invalid argument in a log function
37	Invalid argument in Pow function
38	Invalid argument in toolbox financial function
40	Invalid argument in hyperbolic function
42	Invalid argument in a gamma function

Symbol	Description and result
0	Digit placeholder. For example, if the value 8.9 is to be displayed as 8.90, use the format #.00
#	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall not display extra zeros when the number typed has fewer digits on either side of the decimal than there are # symbols in the format. For example, if the custom format is #.##, and 8.9 is in the cell, the number 8.9 is displayed.
?	Digit placeholder. This symbol follows the same rules as the 0 symbol. However, the application shall put a space for insignificant zeros on either side of the decimal point so that decimal points are aligned in the column. For example, the custom format 0.0? aligns the decimal points for the numbers 8.9 and 88.99 in a column.
. (period)	Decimal point.
%	Percentage. If the cell contains a number between 0 and 1, and the custom format 0% is used, the application shall multiply the number by 100 and adds the percentage symbol in the cell.
, (comma)	Thousands separator. The application shall separate thousands by commas if the format contains a comma that is enclosed by number signs (#) or by zeros. A comma that follows a placeholder scales the number by one thousand. For example, if the format is #.0,, and the cell value is 12,200,000 then the number 12.2 is displayed.
E- E+ e- e+	Scientific format. The application shall display a number to the right of the "E" symbol that corresponds to the number of places that the decimal point was moved. For example, if the format is 0.00E+00, and the value 12,200,000 is in the cell, the number 1.22E+07 is displayed. If the number format is #0.0E+0, then the number 12.2E+6 is displayed.
$ -+/():space	Displays the symbol. If it is desired to display a character that differs from one of these symbols, precede the character with a backslash (\). Alternatively, enclose the character in quotation marks. For example, if the number format is (000), and the value 12 is in the cell, the number (012) is displayed.
\	Display the next character in the format. The application shall not display the backslash. For example, if the number format is 0\!, and the value 3 is in the cell, the value 3! is displayed.
*	Repeat the next character in the format enough times to fill the column to its current width. There shall not be more than one asterisk in one section of the format. If more than one asterisk appears in one section of the format, all but the last asterisk shall be ignored. For example, if the number format is 0*x, and the value 3 is in the cell, the value 3xxxxxx is displayed. The number of x characters that are displayed in the cell varies based on the width of the column.
_ (underline)	Skip the width of the next character. This is useful for lining up negative and positive values in different cells of the same column. For example, the number format _(0.0_);(0.0) aligns the numbers 2.3 and -4.5 in the column even though the negative number is enclosed by parentheses.
"text"	Display whatever text is inside the quotation marks. For example, the format 0.00 "dollars" displays 1.23 dollars when the value 1.23 is in the cell.
@	Text placeholder. If text is typed in the cell, the text from the cell is placed in the format where the at symbol (@) appears. For example, if the number format is "Bob "@" Smith" (including quotation marks), and the value "John" is in the cell, the value Bob John Smith is displayed.

[Black] [Green] [White] [Blue] [Magenta] [Yellow] [Cyan] [Red]

To display	As	Use this code
Months	1-12	m
Months	01-12	mm
Months	Jan-Dec	mmm
Months	January-December	mmmm
Months	J-D	mmmmm
Days	1-31	d
Days	01-31	dd
Days	Sun-Sat	ddd
Days	Sunday-Saturday	dddd
Years	00-99	yy
Years	1900-9999	yyyy
Hours	0-23	h
Hours	00-23	hh
Minutes	0-59	m
Minutes	00-59	mm
Seconds	0-59	s
Seconds	00-59	ss
Time	4 AM	h AM/PM
Time	4:36 PM	h:mm AM/PM
Time	4:36:03 P	h:mm:ss A/P
Time	4:36:03.75	h:mm:ss.00
Elapsed time	1:02	[h] :mm
Elapsed time	62:16	[mm] :ss
Elapsed time	3735.80	[ss] .00

To display	As	Use this code
1234.59	1234.6	####.#
8.9	8.900	#.000
.631	0.6	0.#
12	12.0	#.0#
1234.568	1234.57	#.0#
44.398	44.398	???.???
102.65	102.65	???.???
2.8	2.8	???.???
5.25	5 1/4	# ??/??
5.3	5 3/10	# ??/??
12000	12,000	#,###
12000	12	#,
12400000	12.4	0.0„