Blackmagicdesign

Software Developers Kit

SDK-ATEM Switchers

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Mac OS™

Windows™

Contents

Introduction

Welcome

Thanks for downloading the Blackmagic Design Switcher Software Developers Kit (SDK).

Overview

The Switcher SDK provides a stable, cross- platform interface to a Blackmagic Design Switcher product line. The SDK provides both low-level control of hardware and high-level interfaces to allow developers to easily perform common tasks.

The Switcher SDK consists of a set of interface descriptions & sample applications which demonstrate the use of the features of the Switcher hardware. The details of the SDK are described in this document. Some Switcher capabilities, such as uncompressed USB 3 video capture and H.264 video streaming, must be accessed using the separate DeckLink SDK.

The Switcher SDK supports Microsoft Windows and macOS OS.

You can download the Switcher SDK and DeckLink SDK from the Blackmagic Design support center at: **www.blackmagicdesign.com/support**

The product family is ATEM Live production switchers.

If you're looking for detailed answers regarding technologies used by Blackmagic Design, such as codecs, core media, APIs, SDK and more, visit the Blackmagic Software Developers Forum. The forum is a helpful place for you to engage with both Blackmagic support staff and other forum members who can answer developer specific questions and provide further information. The Software Developers forum can be found within the Blackmagic Design Forum at **forum.blackmagicdesign.com**

If you wish to ask questions outside of the software developers forum, please contact us at: **developer@blackmagicdesign.com**

Section 1 — API Design

1.1 Overview

The libraries supporting the Blackmagic SDK are shipped as part of the product installers for each supported product line. Applications built against the interfaces shipped in the SDK will dynamically link against the library installed on the end-user's system.

1.2 Object Model

The SDK interface is modeled on Microsoft's Component Object Model (COM). On Microsoft Windows platforms, it is provided as a native COM interface registered with the operating system. On other platforms application code is provided to allow the same COM style interface to be used.

The COM model provides a paradigm for creating flexible and extensible interfaces without imposing much overhead or baggage.

1.3 Object Interfaces

The Switcher API provides programmatic access to all current Blackmagic Design ATEM Switchers.

The Switcher API provides high-level interfaces for configuring switcher inputs and performing switcher operations such as making a transition. Some switcher devices delivering uncompressed video over USB 3 or H.264 video streams over USB 2, but this capability must be accessed using the DeckLink API. Refer to the documentation for the DeckLink SDK at www.blackmagicdesign.com/support

Functionality within the API is accessed via “object interfaces”. Each object in the system may inherit from and be accessed via a number of object interfaces. Typically the developer is able to interact with object interfaces and leave the underlying objects to manage themselves.

Each object interface class has a Globally Unique ID (GUID) called an “Interface ID”.
On platforms with native COM support, an IID may be used to obtain a handle to an exported interface object from the OS, which is effectively an entry point to an installed API.

Each interface may have related interfaces that are accessed by providing an IID to an existing object interface (see IUnknown::QueryInterface). This mechanism allows new interfaces to be added to the API without breaking API or ABI compatibility.

1.4 Reference Counting

The API uses reference counting to manage the life cycle of object interfaces.
The developer may need to add or remove references on object interfaces (see **IUnknown::AddRef and IUnknown::Release**) to influence their life cycle as appropriate in the application.

1.5 Interface Stability

The SDK provides a set of stable interfaces for accessing Blackmagic Design hardware. Whilst the published interfaces will remain stable, developers need to be aware of some issues they may encounter as new products, features and interfaces become available.

1.5.1 New Interfaces

Major pieces of new functionality may be added to the SDK as a whole new object interface. Already released applications will not be affected by the additional functionality. Developers making use of the new functionality should be sure to check the return of **CoCreateInstance** and/or **QueryInterface** as these interfaces will not be available on users systems which are running an older release of the Blackmagic software.

Developers can choose to either reduce the functionality of their application when an interface is not available, or to notify the user that they must install a later version of the Blackmagic software.

1.5.2 Updated Interfaces

As new functionality is added to the SDK, some existing interfaces may need to be modified or extended. To maintain compatibility with released software, the original interface will be deprecated but will remain available and maintain its unique identifier (IID). The replacement interface will have a new identifier and remain as similar to the original as possible.

1.5.3 Deprecated Interfaces

Interfaces which have been replaced with an updated version, or are no longer recommended for use are "deprecated". Deprecated interfaces are moved out of the main interface description files into an interface description file named according to the release in which the interface was deprecated. Deprecated interfaces are also renamed with a suffix indicating the release prior to the one in which they were deprecated.

It is recommended that developers update their applications to use the most recent SDK interfaces when they release a new version of their applications. As an interim measure, developers may include the deprecated interface descriptions, and updating the names of the interfaces in their application to access the original interface functionality.

1.5.4 Removed Interfaces

Interfaces that have been deprecated for some time may eventually be removed in a major driver update if they become impractical to support.

1.6 Interface Reference

Every object interface subclasses the **IUnknown** interface.

1.6.1 IUnknown Interface

Each API interface is a subclass of the standard COM base class – **IUnknown**.
The **IUnknown** object interface provides reference counting and the ability to look up related interfaces by interface ID. The interface ID mechanism allows interfaces to be added to the API without impacting existing applications.

Public Member Functions	
Method	**Description**
QueryInterface	Provides access to supported child interfaces of the object.
AddRef	Increments the reference count of the object.
Release	Decrements the reference count of the object. When the final reference is removed, the object is freed.

1.6.1.1 IUnknown::QueryInterface method

The **QueryInterface** method looks up a related interface of an object interface.

Syntax

```
HRESULT    QueryInterface (REFIID id, void **outputInterface);
```

Parameters

Name	**Direction**	**Description**
id	in	Interface ID of interface to lookup.
output Interface	out	New object interface or NULL on failure.

Return Values

Value	**Description**
E_NOINTERFACE	Interface was not found.
S_OK	Success.

1.6.1.2 IUnknown::AddRef method

The **AddRef** method increments the reference count for an object interface.

Syntax

```
ULONG    AddRef();
```

Return Values

Value	Description
Count	New reference count – for debug purposes only.

1.6.1.3 IUnknown::Release method

The Release method decrements the reference count for an object interface. When the last reference is removed from an object, the object will be destroyed.

Syntax

```
ULONG    Release();
```

Return Values

Value	Description
Count	New reference count – for debug purposes only.

1.7 Using the Switcher API in a project

The supplied sample applications provide examples of how to include the Switcher API in a project on each supported platform.

To use the Switcher API in your project, one or more files need to be included:

Windows	`Switchers X.Y\Win\Include\BMDSwitcherAPI.idl`
macOS	`Switchers X.Y/macOS/Include/BMDSwitcherAPI.h`

1.7.1 Basic Types

`boolean`

boolean is represented differently on each platform by using its system type:

Windows	`BOOL`
macOS	`bool`

`String`

String are represented differently on each platform, using the most appropriate system type:

Windows	`BSTR`
macOS	`CFStringRef`

`int64_t`

The 64 bit integer type is represented differently on each platform, using the most appropriate system type:

Windows	`long long`
macOS	`int64_t`

`int32_t`

The 32 bit integer type is represented differently on each platform, using the most appropriate system type:

Windows	`int`
macOS	`int32_t`

`uint32_t`

The 32 bit unsigned type is represented differently on each platform, using the most appropriate system type:

Windows	`unsigned int`
macOS	`uint32_t`

int16_t

The signed 16 bit integer type is represented differently on each platform, using the most appropriate system type:

Windows	`short`
macOS	`int16_t`

uint16_t

The 16 bit unsigned type is represented differently on each platform, using the most appropriate system type:

Windows	`unsigned short`
macOS	`uint16_t`

int8_t

The signed 8 bit integer type is represented differently on each platform, using the most appropriate system type:

Windows	`signed char`
macOS	`int8_t`

uint8_t

The 8 bit unsigned type is represented differently on each platform, using the most appropriate system type:

Windows	`unsigned short`
macOS	`uint8_t`

1.7.2 Accessing Switcher devices

Switcher devices are accessed via the **IBMDSwitcherDiscovery** interface. How a reference to an **IBMDSwitcherDiscovery** is obtained varies between platforms depending on their level of support for COM:

1.7.2.1 Windows

The main entry point to the Switcher API is the **CBMDSwitcherDiscovery** class. This class should be obtained from COM using CoCreateInstance:

```
IBMDSwitcherDiscovery* switcherDiscovery = NULL;

CoCreateInstance (CLSID_CBMDSwitcherDiscovery, NULL, CLSCTX_ALL,
                  IID_IBMDSwitcherDiscovery, (void**)&switcherDiscovery));
```

On success, CoCreateInstance returns an HRESULT of S_OK and switcherDiscovery points to a new **IBMDSwitcherDiscovery** object interface.

1.7.2.2 macOS OS

On macOS OS a C++ entry point is provided to access an **IBMDSwitcherDiscovery** interface:

```
IBMDSwitcherDiscovery* switcherDiscovery = CreateBMDSwitcherDiscoveryInstance();
```

On success, switcherDiscovery will point to a new **IBMDSwitcherDiscovery** object interface otherwise it will be set to NULL.

Section 2 — Basic Switcher Control

The Switcher API provides a framework for controlling ATEM switcher devices. The API enables operations such as configuring switcher inputs, performing a transition and making a cut.

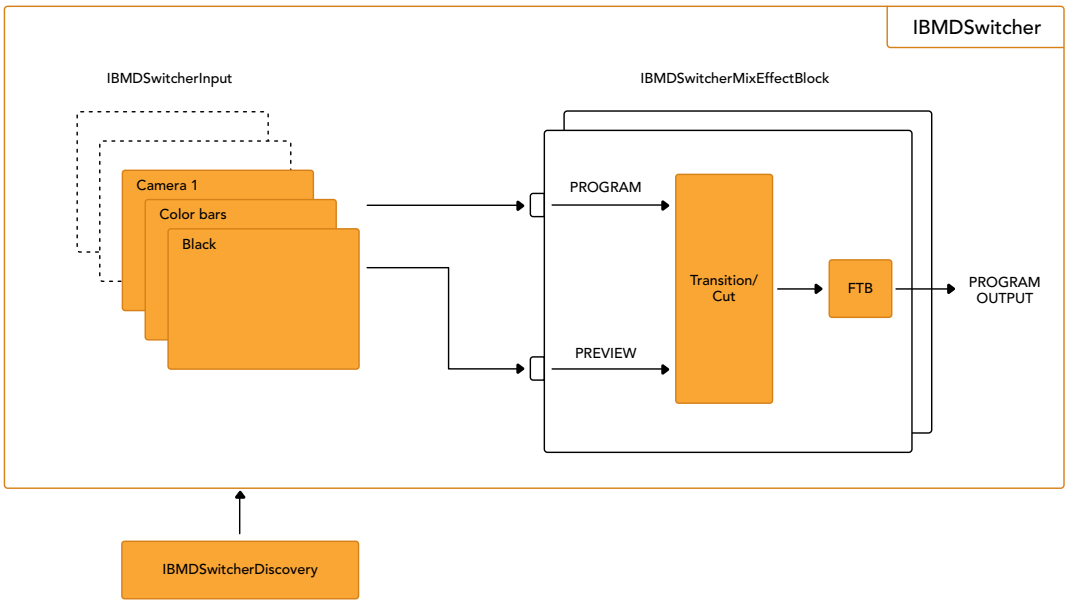
2.1 General Information

2.1.1 Switcher Configuration and Transitions

An application for controlling a switcher may perform the following steps:

- Use **IBMDSwitcherDiscovery::ConnectTo** to connect to a switcher device and obtain an **IBMDSwitcher** object interface
- Use **IBMDSwitcher::CreateIterator** to get an **IBMDSwitcherInputIterator** object interface
- For each **IBMDSwitcherInput** returned by **IBMDSwitcherInputIterator::Next** retrieve the input's unique Id using **IBMDSwitcherInput::GetInputId** and retrieve other properties of the input, such as the input's name, using **IBMDSwitcherInput::GetShortName** or **IBMDSwitcherInput::GetLongName**
- Use **IBMDSwitcher::CreateIterator** to get an **IBMDSwitcherMixEffectBlockIterator** object interface
- Obtain an **IBMDSwitcherMixEffectBlock** object interface using **IBMDSwitcherMixEffectBlockIterator::Next**
- Use **IBMDSwitcherMixEffectBlock::SetProgramInput** and **IBMDSwitcherMixEffectBlock::SetPreviewInput** to set the Program and Preview inputs to the mix effect block by assigning the input Ids returned by **IBMDSwitcherInput::GetInputId**
- Perform a transition between Program and Preview inputs by calling **IBMDSwitcherMixEffectBlock::PerformAutoTransition**
- Install a callback using **IBMDSwitcherMixEffectBlock::AddCallback** and receive **IBMDSwitcherMixEffectBlockCallback::Notify** callbacks when **IBMDSwitcherMixEffectBlock** events occur

2.1.2 Switcher Interface Diagram



2.2 Switcher Data Types

2.2.1 Basic Switcher Data Types

BMDSwitcherInputId

BMDSwitcherInputId is a signed 64 bit integer type and used as a unique Id for each switcher input.

2.2.2 Switcher Event Type

BMDSwitcherEventType enumerates the possible event types for **IBMDSwitcherCallback**.

- **bmdSwitcherEventTypeVideoModeChanged**
  The video standard changed.
- **bmdSwitcherEventTypeMethodForDownConvertedSDChanged**
  The method for down converted SD output has changed.
- **bmdSwitcherEventTypeDownConvertedHDVideoModeChanged**
  The down converted HD output video standard changed for a particular core video standard.
- **bmdSwitcherEventTypeMultiViewVideoModeChanged**
  The MultiView standard changed for a particular core video standard.
- **bmdSwitcherEventTypePowerStatusChanged**
  The power status changed.
- **bmdSwitcherEventTypeDisconnected**
  The switcher disconnected.
- **bmdSwitcherEventType3GSDIOutputLevelChanged**
  The 3GSDI output level changed.
- **bmdSwitcherEventTypeTimeCodeChanged**
  The current timecode has changed. This only occurs when another event causes the currently cached timecode to be updated.
- **bmdSwitcherEventTypeTimeCodeLockedChanged**
  The editable status of the timecode has changed.
- **bmdSwitcherEventTypeTimeCodeModeChanged**
  The current timecode mode has changed.
- **bmdSwitcherEventTypeSuperSourceCascadeChanged**
  The Supersource cascade mode has changed.
- **bmdSwitcherEventTypeAutoVideoModeChanged**
  The auto video mode state has changed.
- **bmdSwitcherEventTypeAutoVideoModeDetectedChanged**
  The auto video mode detection state has changed.

2.2.3 Switcher Power Status

BMDSwitcherPowerStatus enumerates the possible power status flags.
This type is used by the **IBMDSwitcher** object interface.

- **bmdSwitcherPowerStatusSupply1**
  Supply 1 has power.
- **bmdSwitcherPowerStatusSupply2**
  Supply 2 has power.

2.2.4 Switcher Video Mode

BMDSwitcherVideoMode enumerates the video standards employed by the switcher.

- **bmdSwitcherVideoMode525i5994NTSC**
  525 pixels high, interlaced at 59.94Hz (NTSC).
- **bmdSwitcherVideoMode625i50PAL**
  625 pixels high, interlaced at 50Hz (PAL).
- **bmdSwitcherVideoMode525i5994Anamorphic**
  525 pixels high, interlaced at 59.94Hz (anamorphic 16:9 widescreen).
- **bmdSwitcherVideoMode625i50Anamorphic**
  625 pixels high, interlaced at 50Hz (anamorphic 16:9 widescreen).
- **bmdSwitcherVideoMode720p50**
  720 pixels high, progressively scanned at 50Hz.
- **bmdSwitcherVideoMode720p5994**
  720 pixels high, progressively scanned at 59.94Hz.
- **bmdSwitcherVideoMode1080i50**
  1080 pixels high, interlaced at 50Hz.
- **bmdSwitcherVideoMode1080i5994**
  1080 pixels high, interlaced at 59.94Hz.
- **bmdSwitcherVideoMode1080p2398**
  1080 pixels high, progressively scanned at 23.98Hz.
- **bmdSwitcherVideoMode1080p24**
  1080 pixels high, progressively scanned at 24Hz.
- **bmdSwitcherVideoMode1080p25**
  1080 pixels high, progressively scanned at 25Hz.
- **bmdSwitcherVideoMode1080p2997**
  1080 pixels high, progressively scanned at 29.97Hz.
- **bmdSwitcherVideoMode1080p30**
  1080 pixels high, progressively scanned at 30Hz.
- **bmdSwitcherVideoMode1080p50**
  1080 pixels high, progressively scanned at 50Hz.
- **bmdSwitcherVideoMode1080p5994**
  1080 pixels high, progressively scanned at 59.94Hz
- **bmdSwitcherVideoMode4KHDp2398**
  2160 pixels high, 3840 pixels wide, progressively scanned at 23.98Hz.
- **bmdSwitcherVideoMode4KHDp24**
  2160 pixels high, 3840 pixels wide, progressively scanned at 24Hz.
- **bmdSwitcherVideoMode4KHDp25**
  2160 pixels high, 3840 pixels wide, progressively scanned at 25Hz.
- **bmdSwitcherVideoMode4KHDp2997**
  2160 pixels high, 3840 pixels wide, progressively scanned at 29.97Hz.
- **bmdSwitcherVideoMode4KHDp50**
  2160 pixels high, 3840 pixels wide, progressively scanned at 50Hz.
- **bmdSwitcherVideoMode4KHDp5994**
  2160 pixels high, 3840 pixels wide, progressively scanned at 59.94Hz.

- **bmdSwitcherVideoMode1080p60**
  1080 pixels high, progressively scanned at 60Hz.
- **bmdSwitcherVideoMode8KHDp2398**
  4320 pixels high, 7680 pixels wide, progressively scanned at 23.98Hz.
- **bmdSwitcherVideoMode8KHDp24**
  4320 pixels high, 7680 pixels wide, progressively scanned at 24Hz.
- **bmdSwitcherVideoMode8KHDp25**
  4320 pixels high, 7680 pixels wide, progressively scanned at 25Hz.
- **bmdSwitcherVideoMode8KHDp2997**
  4320 pixels high, 7680 pixels wide, progressively scanned at 29.97Hz.
- **bmdSwitcherVideoMode8KHDp50**
  4320 pixels high, 7680 pixels wide, progressively scanned at 50Hz.
- **bmdSwitcherVideoMode8KHDp5994**
  4320 pixels high, 7680 pixels wide, progressively scanned at 59.94Hz.

2.2.5 Switcher Down Conversion Methods

BMDSwitcherDownConversionMethod enumerates the possible methods for SD down conversion between broadcast standards.

- **bmdSwitcherDownConversionMethodCentreCut**
  Centre cut conversion.
- **bmdSwitcherDownConversionMethodLetterbox**
  Letter box conversion.
- **bmdSwitcherDownConversionMethodAnamorphic**
  Anamorphic conversion.

2.2.6 Switcher Input Event Type

BMDSwitcherInputEventType enumerates the possible event types for **IBMDSwitcherInputCallback**.

- **bmdSwitcherInputEventTypeShortNameChanged**
  The short name of the input changed.
- **bmdSwitcherInputEventTypeLongNameChanged**
  The long name of the input changed.
- **bmdSwitcherInputEventTypeIsProgramTalliedChanged**
  Program tallying for this input was turned on or turned off.
- **bmdSwitcherInputEventTypeIsPreviewTalliedChanged**
  Preview tallying for this input was turned on or turned off.
- **bmdSwitcherInputEventTypeAvailableExternalPortTypesChanged**
  The external port types available to this input changed.
- **bmdSwitcherInputEventTypeCurrentExternalPortTypeChanged**
  The current external port type of this input changed.
- **bmdSwitcherInputEventTypeAreNamesDefaultChanged**
  The long or short names changed from the default OR the long and short names changed to the default.

2.2.7 Switcher External Port Types

BMDSwitcherExternalPortType enumerates the different kinds of external port type for an input. This enumeration represents a bitset since an input port may support more than one connection type.

- **bmdSwitcherExternalPortTypeSDI**
  SDI connection.
- **bmdSwitcherExternalPortTypeHDMI**
  HDMI connection.
- **bmdSwitcherExternalPortTypeComponent**
  Component connection.
- **bmdSwitcherExternalPortTypeComposite**
  Composite connection, only available in SD video modes.
- **bmdSwitcherExternalPortTypeSVideo**
  SVideo connection, only available in SD video modes.
- **bmdSwitcherExternalPortTypeXLR**
  XLR audio connection.
- **bmdSwitcherExternalPortTypeAESEBU**
  AES EBU audio connection.
- **bmdSwitcherExternalPortTypeRCA**
  RCA audio connection.
- **bmdSwitcherExternalPortTypeTSJack**
  TS audio connection.
- **bmdSwitcherExternalPortTypeMADI**
  MADI audio connection.
- **bmdSwitcherExternalPortTypeTRS**
  TRS audio connection.

2.2.8 Switcher Port Types

BMDSwitcherPortType enumerates the possible switcher input port types available for switching.

- **bmdSwitcherPortTypeExternal**
  The port is an external port with a physical connector.
- **bmdSwitcherPortTypeBlack**
  The port is a black video generator port.
- **bmdSwitcherPortTypeColorBars**
  The port is a colorbars generator port.
- **bmdSwitcherPortTypeColorGenerator**
  The port is a color generator port.
- **bmdSwitcherPortTypeMediaPlayerFill**
  The port is a media player fill port.
- **bmdSwitcherPortTypeMediaPlayerCut**
  The port is a media player cut port.
- **bmdSwitcherPortTypeSuperSource**
  The port is a super source port.
- **bmdSwitcherPortTypeMixEffectBlockOutput**
  The port is a mix effect block output port.
- **bmdSwitcherPortTypeAuxOutput**
  The port is an auxiliary output port.

- **bmdSwitcherPortTypeMultiview**
  The port is a MultiView port.
- **bmdSwitcherPortTypeExternalDirect**
  The port comes from an external port with a physical connection and bypasses all switcher processing.

2.2.9 Switcher Input Availability

BMDSwitcherInputAvailability enumerates the different kinds of input availability for a port.
This enumeration represents a bitset since an input can have multiple availabilities.

- **bmdSwitcherInputAvailabilityMixEffectBlock0**
  The input is available to be used by mix effect block 0.
- **bmdSwitcherInputAvailabilityMixEffectBlock1**
  The input is available to be used by mix effect block 1.
- **bmdSwitcherInputAvailabilityMixEffectBlock2**
  The input is available to be used by mix effect block 2.
- **bmdSwitcherInputAvailabilityMixEffectBlock3**
  The input is available to be used by mix effect block 3.
- **bmdSwitcherInputAvailabilityAux1Output**
  The input is available to be used by aux output 1.
- **bmdSwitcherInputAvailabilityAux2Output**
  The input is available to be used by aux output 2.
- **bmdSwitcherInputAvailabilityAuxOutputs**
  The input is available to be used by aux outputs.
- **bmdSwitcherInputAvailabilityMultiView**
  The input can be routed to a MultiView window.
- **bmdSwitcherInputAvailabilitySuperSourceArt**
  The input is available to be used for SuperSource Art.
- **bmdSwitcherInputAvailabilitySuperSourceBox**
  The input is available to be used within a SuperSource Box.
- **bmdSwitcherInputAvailabilityInputCut**
  The input is available to be used as a cut.

2.2.10 Switcher Mix Effect Block Events

BMDSwitcherMixEffectBlockEventType enumerates the possible event types for **IBMDSwitcherMixEffectBlockCallback**.

- **bmdSwitcherMixEffectBlockEventTypeProgramInputChanged**
  The program input changed.
- **bmdSwitcherMixEffectBlockEventTypePreviewInputChanged**
  The preview input changed.
- **bmdSwitcherMixEffectBlockEventTypeTransitionPositionChanged**
  The transition position changed.
- **bmdSwitcherMixEffectBlockEventTypeTransitionFramesRemainingChanged**
  The transition frames remaining changed.
- **bmdSwitcherMixEffectBlockEventTypeInTransitionChanged**
  The in transition flag changed.
- **bmdSwitcherMixEffectBlockEventTypeFadeToBlackFramesRemainingChanged**
  The fade to black frames remaining changed.
- **bmdSwitcherMixEffectBlockEventTypeInFadeToBlackChanged**
  The in fade to black flag changed.

- **bmdSwitcherMixEffectBlockEventTypePreviewLiveChanged**
  The preview live flag changed.
- **bmdSwitcherMixEffectBlockEventTypePreviewTransitionChanged**
  The preview transition changed.
- **bmdSwitcherMixEffectBlockEventTypeInputAvailabilityMaskChanged**
  The input availability mask changed.
- **bmdSwitcherMixEffectBlockEventTypeFadeToBlackRateChanged**
  The fade to black rate changed.
- **bmdSwitcherMixEffectBlockEventTypeFadeToBlackFullyBlackChanged**
  The fade to black fully black flag changed.
- **bmdSwitcherMixEffectBlockEventTypeFadeToBlackInTransitionChanged**
  The fade to black in transition flag changed.

2.2.11 Switcher Connection Errors

BMDSwitcherConnectToFailure enumerates the possible errors that can occur when connecting to a switcher.

- **bmdSwitcherConnectToFailureNoResponse**
  The Switcher did not respond after a connection attempt was made.
- **bmdSwitcherConnectToFailureIncompatibleFirmware**
  The software on the Switcher is incompatible with the current version of the Switcher SDK.
- **bmdSwitcherConnectToFailureCorruptData**
  Corrupt data was received during a connection attempt.
- **bmdSwitcherConnectToFailureStateSync**
  State synchronisation failed during a connection attempt.
- **bmdSwitcherConnectToFailureStateSyncTimedOut**
  State synchronisation timed out during a connection attempt.

2.2.12 Switcher MultiView Layouts

BMDSwitcherMultiViewLayout enumerates the possible layout formats for MultiView. This enumeration represents a bitset that indicates whether each quadrant of the screen displays as one large window or four small windows.

- **bmdSwitcherMultiViewLayoutProgramTop**
  Program and preview reside in upper section of the screen, windows reside below.
- **bmdSwitcherMultiViewLayoutProgramBottom**
  Program and preview reside in lower section of the screen, windows reside above.
- **bmdSwitcherMultiViewLayoutProgramLeft**
  Program and preview reside on left hand side, windows reside on the right.
- **bmdSwitcherMultiViewLayoutProgramRight**
  Program and preview reside on right hand side, windows reside on the left.
- **bmdSwitcherMultiViewLayoutTopLeftSmall**
  Bitmask for the top left quadrant. If set, four small windows are shown. If not set, a single large window is shown.
- **bmdSwitcherMultiViewLayoutTopRightSmall**
  Bitmask for the top right quadrant. If set, four small windows are shown. If not set, a single large window is shown.
- **bmdSwitcherMultiViewLayoutBottomLeftSmall**
  Bitmask for the bottom left quadrant. If set, four small windows are shown. If not set, a single large window is shown.
- **bmdSwitcherMultiViewLayoutBottomRightSmall**
  Bitmask for the bottom right quadrant. If set, four small windows are shown. If not set, a single large window is shown.

2.2.13 Switcher Serial Port Functions

BMDSwitcherSerialPortFunction enumerates the functions the serial port can perform.

- **bmdSwitcherSerialPortFunctionNone**
  The serial port is not being used.
- **bmdSwitcherSerialPortFunctionPtzVisca**
  The serial port is used to control a Pan-Tilt-Zoom camera using the VISCA protocol.
- **bmdSwitcherSerialPortFunctionGvg100**
  If the serial port is set to this function, the switcher can be controlled by a connected GVG100 compatible editor/controller.

2.2.14 Switcher 3G-SDI Output Levels

BMDSwitcher3GSDIOutputLevel enumerates the possible 3G-SDI output encoding levels.

- **bmdSwitcher3GSDIOutputLevelA**
  All 3G-SDI outputs use level A encoding.
- **bmdSwitcher3GSDIOutputLevelB**
  All 3G-SDI outputs use level B encoding.

2.2.15 Switcher Mix Minus Output Audio Modes

BMDSwitcherMixMinusOutputAudioMode enumerates the different audio modes for **IBMDSwitcherMixMinusOutput**.

- **bmdSwitcherMixMinusOutputAudioModeProgramOut**
  The mix minus output audio is program out.
- **bmdSwitcherMixMinusOutputAudioModeMixMinus**
  The mix minus output audio is program out minus the corresponding input.

2.2.16 Switcher Color Events

BMDSwitcherInputColorEventType enumerates the possible event types for **IBMDSwitcherInputColorCallback**.

- **bmdSwitcherInputColorEventTypeHueChanged**
  The hue changed.
- **bmdSwitcherInputColorEventTypeSaturationChanged**
  The saturation changed.
- **bmdSwitcherInputColorEventTypeLumaChanged**
  The luma changed.

2.2.17 Switcher Aux Events

BMDSwitcherInputAuxEventType enumerates the possible event types for **IBMDSwitcherInputAuxCallback**.

- **bmdSwitcherInputAuxEventTypeInputSourceChanged**
  The input source changed.

2.2.18 Switcher MultiView Events

BMDSwitcherMultiViewEventType enumerates the possible event types for **IBMDSwitcherMultiViewCallback**.

- **bmdSwitcherMultiViewEventTypeLayoutChanged**
  The layout changed.
- **bmdSwitcherMultiViewEventTypeWindowChanged**
  Routing to a MultiView window has changed.
- **bmdSwitcherMultiViewEventTypeCurrentInputSupportsVuMeterChanged**
  The input of a MultiView window changed to/from an input that supports VU meters from/to one that does not.
- **bmdSwitcherMultiViewEventTypeVuMeterEnabledChanged**
  The enabled state of one of the VU meters changed.
- **bmdSwitcherMultiViewEventTypeVuMeterOpacityChanged**
  The opacity of one of the VU meters changed.
- **bmdSwitcherMultiViewEventTypeCurrentInputSupportsSafeAreaChanged**
  The input of a MultiView window changed to/from an input that supports safe area display from/to one that does not.
- **bmdSwitcherMultiViewEventTypeSafeAreaEnabledChanged**
  The enabled state of the safe area overlay changed.
- **bmdSwitcherMultiViewEventTypeProgramPreviewSwappedChanged**
  The positioning of the program and preview windows changed from standard to swapped or from swapped to standard.

2.2.19 Switcher Serial Port Events

BMDSwitcherSerialPortEventType enumerates the possible event types for **IBMDSwitcherSerialPortCallback**.

- **bmdSwitcherSerialPortEventTypeFunctionChanged**
  The function of the serial port has changed.

2.2.20 Switcher Mix Minus Output Events

BMDSwitcherMixMinusOutputEventType enumerates the possible event types for **IBMDSwitcherMixMinusOutputCallback**.

- **bmdSwitcherMixMinusOutputEventTypeAvailableAudioModesChanged**
  The audio modes available to this mix minus output have changed.
- **bmdSwitcherMixMinusOutputEventTypeAudioModeChanged**
  The mix minus output audio mode changed.
- **bmdSwitcherMixMinusOutputEventTypeHasMinusAudioInputIdChanged**
  The mix minus output has minus audio input ID flag has changed.
- **bmdSwitcherMixMinusOutputEventTypeMinusAudioInputIdChanged**
  The mix minus output minus audio input ID has changed.

2.2.21 Save And Recall Type

BMDSwitcherSaveRecallType enumerates the possible operating states for the **IBMDSwitcherSaveRecall** object interface.

- **bmdSwitcherSaveRecallTypeStartupState**
  This type of operating state will be restored whenever a switcher is powered on.

2.2.22 Switcher TimeCode Mode Type

BMDSwitcherTimeCodeMode enumerates the possible modes available for running timecode.

Key	Value	Description
bmdSwitcherTimeCodeModeFreeRun	'tmfr'	The timecode runs freely and typically starts at 00:00:00:00 when the switcher was powered on.
bmdSwitcherTimeCodeModeTimeOfDay	'tmtd'	The timecode runs freely and is synchronised with the current time of day.

2.3 Interface Reference

2.3.1 IBMDSwitcherDiscovery Interface

The **IBMDSwitcherDiscovery** object interface is used to connect to a physical switcher device.

A reference to an **IBMDSwitcherDiscovery** object interface may be obtained from **CoCreateInstance** on platforms with native COM support or from **CreateBMDSwitcherDiscoveryInstance** on other platforms.

Public Member Functions	
Method	**Description**
ConnectTo	Connect to a switcher

2.3.1.1 IBMDSwitcherDiscovery::ConnectTo method

The **ConnectTo** method connects to the specified switcher and returns an **IBMDSwitcher** object interface for the switcher.

> **NOTE** **ConnectTo** performs a synchronous network connection. This may take several seconds depending upon hostname resolution and network response times.
>
> If a network connection cannot be established, **ConnectTo** will attempt to connect via USB if the switcher supports it.

Syntax

```
HRESULT     ConnectTo (string deviceAddress, IBMDSwitcher** switcherDevice,
            BMDSwitcherConnectToFailure* failReason);
```

Parameters

Name	Direction	Description
deviceAddress	in	Network hostname or IP address of switcher to connect to. Set this empty to only connect via USB.
switcherDevice	out	**IBMDSwitcher** object interface for the connected switcher.
failReason	out	Reason for connection failure as a **BMDSwitcherConnectToFailure** value.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The switcherDevice or failReason parameter is invalid.

2.3.2 IBMDSwitcher Interface

The **IBMDSwitcher** object interface represents a physical switcher device.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherDiscovery	IID_IBMDSwitcherDiscovery	An **IBMDSwitcher** object will be returned after a successful call to the **IBMDSwitcherDiscovery::ConnectTo** method

Public Member Functions	
Method	**Description**
GetProductName	Get the product name of the switcher.
GetVideoMode	Get the current video standard applied across the switcher.
SetVideoMode	Set the video standard applied across the switcher.
DoesSupportVideoMode	Determines if a video standard is supported by the switcher.
DoesVideoModeChangeRequireReconfiguration	Determines if changing video standard will reconfigure the switcher.
GetMethodForDownConvertedSD	Get the SD conversion method applied when down converting between broadcast standards.
SetMethodForDownConvertedSD	Set the SD conversion method applied when down converting between broadcast standards.
GetDownConvertedHDVideoMode	Get the down converted HD video standard for a particular core video standard.
SetDownConvertedHDVideoMode	Set the down converted HD video standard for a particular core video standard.
DoesSupportDownConvertedHDVideoMode	Determines if a down converted HD video standard is supported by a particular core video standard.
GetMultiViewVideoMode	Get the MultiView video standard for a particular core video standard.
SetMultiViewVideoMode	Set the MultiView video standard for a particular core video standard.
DoesSupportMultiViewVideoMode	Determines if a MultiView video standard is supported by a particular core video standard.
Get3GSDIOutputLevel	Gets the current 3G-SDI output encoding level of the switcher
Set3GSDIOutputLevel	Sets the current 3G-SDI output encoding level of the switcher.
GetPowerStatus	Gets the power status of the switcher.
GetTimeCode	Get the cached timecode.
SetTimeCode	Set the current timecode.
RequestTimeCode	Request the current timecode from the switcher.
GetTimeCodeLocked	Get the current timecode locked flag.
GetTimeCodeMode	Get the current timecode mode.
SetTimeCodeMode	Set the current timecode mode.
GetAreOutputsConfigurable	Determines if all switcher outputs are fixed or configurable.
GetSuperSourceCascade	Get the current SuperSource cascade flag.

Public Member Functions	
Method	**Description**
SetSuperSourceCascade	Set the SuperSource cascade flag.
DoesSupportAutoVideoMode	Determines if auto video mode is supported by the switcher.
GetAutoVideoMode	Get the current auto video mode state.
GetAutoVideoModeDetected	Get the current state of the input video mode detection.
SetAutoVideoMode	Set the auto video mode state.
CreateIterator	Create an iterator.
AddCallback	Add a callback to receive switcher events.
RemoveCallback	Remove a callback.

2.3.2.1 IBMDSwitcher::GetProductName method

The **GetProductName** method gets the product name of the switcher.

Syntax

```
HRESULT     GetProductName (string* productName);
```

Parameters

Name	Direction	Description
productName	out	The product name of the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The productName parameter is invalid.

2.3.2.2 IBMDSwitcher::GetVideoMode method

The **GetVideoMode** method gets the current video standard applied across the switcher.

Syntax

```
HRESULT     GetVideoMode (BMDSwitcherVideoMode* videoMode);
```

Parameters

Name	Direction	Description
videoMode	out	The current video standard applied across the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The videoMode parameter is invalid.

2.3.2.3 IBMDSwitcher::SetVideoMode method

The **SetVideoMode** method sets the video standard applied across the switcher.

Syntax

```
HRESULT     SetVideoMode (BMDSwitcherVideoMode videoMode);
```

Parameters

Name	Direction	Description
videoMode	in	The video standard applied across the switcher.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The videoMode parameter is invalid.
S_FALSE	The video standard cannot be set while auto video mode is enabled.

2.3.2.4 IBMDSwitcher::DoesSupportVideoMode method

The **DoesSupportVideoMode** method determines if a video standard is supported by the switcher.

Syntax

```
HRESULT     DoesSupportVideoMode(BMDSwitcherVideoMode videoMode, boolean* supported);
```

Parameters

Name	Direction	Description
videoMode	in	The video standard.
supported	out	Boolean value that is true if the video standard is supported.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is invalid.

2.3.2.5 IBMDSwitcher::DoesVideoModeChangeRequireReconfiguration method

The **DoesVideoModeChangeRequireReconfiguration** method determines if changing to the specified video standard will cause the switcher to be reconfigured, which may result in the switcher restarting.

Syntax

```
HRESULT     DoesVideoModeChangeRequireReconfiguration
            (BMDSwitcherVideoMode videoMode, boolean* required)
```

Parameters

Name	Direction	Description
videoMode	in	The video standard.
required	out	Boolean value that is true if changing to the video standard will reconfigure the switcher.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The videoMode is not a valid video standard.
E_POINTER	The required parameter is invalid.

2.3.2.6 IBMDSwitcher::GetMethodForDownConvertedSD method

The **GetMethodForDownConvertedSD** method gets the SD conversion method applied when down converting between broadcast standards.

Syntax

```
HRESULT     GetMethodForDownConvertedSD (BMDSwitcherDownConversionMethod* method);
```

Parameters

Name	Direction	Description
method	out	The conversion method.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The method parameter is invalid.

2.3.2.7 IBMDSwitcher::SetMethodForDownConvertedSD method

The **SetMethodForDownConvertedSD** method sets the SD conversion method applied when down converting between broadcast standards.

Syntax

```
HRESULT     SetMethodForDownConvertedSD (BMDSwitcherDownConversionMethod method);
```

Parameters

Name	Direction	Description
method	in	The conversion method.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The method parameter is invalid.

2.3.2.8 IBMDSwitcher::GetDownConvertedHDVideoMode method

The **GetDownConvertedHDVideoMode** method gets the down converted HD output video standard for a particular core video standard.

Syntax

```
HRESULT     GetDownConvertedHDVideoMode (BMDSwitcherVideoMode coreVideoMode,
            BMDSwitcherVideoMode* downConvertedHDVideoMode);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard to be down converted.
downConvertedHDVideoMode	out	The mode to which the core video standard is down converted.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The **downConvertedHDVideoMode** parameter is invalid.
E_INVALIDARG	The **coreVideoMode** parameter is invalid or not supported.
E_NOTIMPL	HD down conversion is not supported.

2.3.2.9 IBMDSwitcher::SetDownConvertedHDVideoMode method

The **SetDownConvertedHDVideoMode** method sets the down converted HD output video standard for a particular core video standard.

Syntax

```
HRESULT     SetDownConvertedHDVideoMode (BMDSwitcherVideoMode coreVideoMode,
            BMDSwitcherVideoMode downConvertedHDVideoMode);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard to be down converted.
downConvertedHDVideoMode	in	The mode to which the core video standard is to be down converted.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The coreVideoMode or **downConvertedHDVideoMode** parameter is invalid or not supported.
E_NOTIMPL	HD down conversion is not supported.

2.3.2.10 IBMDSwitcher::DoesSupportDownConvertedHDVideoMode method

The **DoesSupportDownConvertedHDVideoMode** method determines if a down converted HD output video standard is supported by a particular core video standard.

Syntax

```
HRESULT     DoesSupportDownConvertedHDVideoMode (BMDSwitcherVideoMode coreVideoMode,
            MDSwitcherVideoMode downConvertedHDVideoMode, boolean* supported);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard to be down converted.
downConvertedHDVideoMode	in	The down converted video standard to determine support for.
supported	out	Boolean value that is true if the **downConvertedHDVideoMode** is supported for the core video standard.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is invalid.
E_INVALIDARG	The downConvertedHDVideoMode parameter is invalid.
E_NOTIMPL	The switcher does not support HD down conversion.

2.3.2.11 IBMDSwitcher::GetMultiViewVideoMode method

The **GetMultiViewVideoMode** method gets the MultiView video standard for a particular core video standard.

Syntax

```
HRESULT     GetMultiViewVideoMode (BMDSwitcherVideoMode coreVideoMode,
            BMDSwitcherVideoMode* multiviewVideoMode);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard.
multiviewVideoMode	out	The MultiView standard used with the core video standard.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The multiviewVideoMode parameter is invalid.
E_INVALIDARG	The coreVideoMode parameter is invalid or not supported.

2.3.2.12 IBMDSwitcher::SetMultiViewVideoMode method

The **SetMultiViewVideoMode** method gets the MultiView video standard for a particular core video standard.

Syntax

```
HRESULT     SetMultiViewVideoMode (BMDSwitcherVideoMode coreVideoMode,
            BMDSwitcherVideoMode multiviewVideoMode);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard.
multiviewVideoMode	in	The MultiView standard to set with the core video standard.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The coreVideoMode or multiviewVideoMode parameter is invalid or not supported.

2.3.2.13 IBMDSwitcher::Get3GSDIOutputLevel method

The **Get3GSDIOutputLevel** method gets the output encoding level for all 3G-SDI outputs of the switcher, on models supporting 3G-SDI video formats.

Syntax

```
HRESULT     Get3GSDIOutputLevel (BMDSwitcher3GSDIOutputLevel* outputLevel);
```

Parameters

Name	Direction	Description
outputLevel	out	The current 3G-SDI output level.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The outputLevel parameter is invalid.
E_NOTIMPL	The connected switcher does not support 3G-SDI output.

2.3.2.14 IBMDSwitcher::Set3GSDIOutputLevel method

The **Set3GSDIOutputLevel** method sets the output encoding level for all 3G-SDI outputs of the switcher, on models supporting 3G-SDI video formats.

Syntax

```
HRESULT     Set3GSDIOutputLevel (BMDSwitcher3GSDIOutputLevel outputLevel);
```

Parameters

Name	Direction	Description
outputLevel	in	The desired 3G-SDI output level.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The connected switcher does not support 3G-SDI output.

2.3.2.15 IBMDSwitcher::DoesSupportMultiViewVideoMode method

The **DoesSupportMultiViewVideoMode** method determines if a MultiView video standard is supported for a particular core video standard.

Syntax

```
HRESULT     DoesSupportMultiViewVideoMode (BMDSwitcherVideoMode coreVideoMode,
            BMDSwitcherVideoMode multiviewVideoMode, boolean* supported);
```

Parameters

Name	Direction	Description
coreVideoMode	in	The core video standard.
multiviewVideoMode	in	The MultiView video standard to use for the coreVideoMode.
supported	out	Boolean value that is true if the MultiView video standard is supported for the coreVideoMode.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is invalid.
E_INVALIDARG	The multiviewVideoMode parameter is invalid.

2.3.2.16 IBMDSwitcher::GetPowerStatus method

The **GetPowerStatus** method gets the connected power status, useful for models supporting multiple power sources.

Syntax

```
HRESULT     GetPowerStatus (BMDSwitcherPowerStatus* powerStatus);
```

Parameters

Name	Direction	Description
powerStatus	out	The power status.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The powerStatus parameter is invalid.

2.3.2.17 IBMDSwitcher::GetTimeCode method

The **GetTimeCode** method returns the timecode that was last received from the switcher.

Syntax

```
HRESULT     GetTimeCode (uint8_t* hours, uint8_t* minutes,
            uint8_t* seconds, uint8_t* frames, boolean* dropFrame)
```

Parameters

Name	Direction	Description
hours	out	The hours value of the timecode.
minutes	out	The minutes value of the timecode.
seconds	out	The seconds value of the timecode.
frames	out	The frames value of the timecode.
dropFrame	out	Whether the timecode is drop frame.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No timecode has been received from the switcher.
E_POINTER	A parameter is invalid.

2.3.2.18 IBMDSwitcher::SetTimeCode method

The **SetTimeCode** method sets the timecode of the switcher.

Syntax

```
HRESULT     SetTimeCode (uint8_t hours, uint8_t minutes, uint8_t seconds, uint8_t frames)
```

Parameters

Name	Direction	Description
hours	in	The hours value of the timecode.
minutes	in	The minutes value of the timecode.
seconds	in	The seconds value of the timecode.
frames	in	The frames value of the timecode.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	A parameter is not a valid value.
E_FAIL	Failure.

2.3.2.19 IBMDSwitcher::RequestTimeCode method

The **RequestTimeCode** method requests the current timecode from the switcher which will be cached when received. Use the **GetTimeCode** method to get the cached timecode.

Syntax

```
HRESULT     RequestTimeCode()
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.2.20 IBMDSwitcher::GetTimeCodeLocked method

The **GetTimeCodeLocked** method indicates whether the timecode can be changed with **SetTimeCode**.

Syntax

```
HRESULT     GetTimeCodeLocked(boolean* timeCodeLocked)
```

Parameters

Name	Direction	Description
timeCodeLocked	out	The current timecode locked flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The timeCodeLocked parameter is invalid.

2.3.2.21 IBMDSwitcher::GetTimeCodeMode method

The **GetTimeCodeMode** method returns the current timecode mode of the switcher.

Syntax

```
HRESULT     GetTimeCodeMode(BMDSwitcherTimeCodeMode* timeCodeMode)
```

Parameters

Name	Direction	Description
timeCodeMode	out	The current timecode mode.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The timeCodeMode parameter is invalid.
S_FALSE	The switcher does not support timecode mode functionality.

2.3.2.22 IBMDSwitcher::SetTimeCodeMode method

The **SetTimeCodeMode** method sets the timecode mode of the switcher.

Syntax

```
HRESULT     SetTimeCodeMode(BMDSwitcherTimeCodeMode timeCodeMode)
```

Parameters

Name	Direction	Description
timeCodeMode	in	The timecode mode to be set.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The timeCodeMode parameter is invalid.
E_FAIL	Failure.

2.3.2.23 IBMDSwitcher::GetAreOutputsConfigurable method

The **GetAreOutputsConfigurable** method indicates whether all of the switcher's outputs can be configured. Some switchers have mostly fixed outputs and only a small number of configurable outputs. Other switchers only have configurable outputs.

Syntax

```
HRESULT     GetAreOutputsConfigurable(boolean* configurable)
```

Parameters

Name	Direction	Description
configurable	out	Boolean that indicates if the switcher only has configurable outputs.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The configurable parameter is invalid.

2.3.2.24 IBMDSwitcher::GetSuperSourceCascade method

The **GetSuperSourceCascade** method indicates whether the SuperSource cascade mode is currently enabled.

Syntax

```
HRESULT     GetSuperSourceCascade(boolean* cascade)
```

Parameters

Name	Direction	Description
cascade	out	The current **SuperSource** cascade flag.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support **SuperSource** cascade.
E_POINTER	The cascade parameter is invalid.

2.3.2.25 IBMDSwitcher::SetSuperSourceCascade method

The **SetSuperSourceCascade** method is used to enable or disable the SuperSource cascade mode.

Syntax

```
HRESULT     SetSuperSourceCascade(boolean cascade)
```

Parameters

Name	Direction	Description
cascade	in	The desired **SuperSource** cascade flag.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support **SuperSource** cascade.
E_FAIL	Failure.

2.3.2.26 IBMDSwitcher::DoesSupportAutoVideoMode method

The DoesSupportAutoVideoMode method determines if auto video mode is supported by the switcher.

Syntax

```
HRESULT     DoesSupportAutoVideoMode(Boolean* supported)
```

Parameters

Name	Direction	Description
supported	out	A Boolean value indicating whether the switcher supports auto video mode.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is invalid.

2.3.2.27 IBMDSwitcher::GetAutoVideoMode method

The GetAutoVideoMode method indicates whether auto video mode is currently enabled.

Syntax

```
HRESULT     GetAutoVideoMode(Boolean* enabled)
```

Parameters

Name	Direction	Description
enabled	out	A Boolean value indicating whether auto video mode is enabled.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support auto video mode.
E_POINTER	The enabled parameter is invalid.

2.3.2.28 IBMDSwitcher::GetAutoVideoModeDetected method

The GetAutoVideoModeDetected method indicates whether an input video mode has been detected.

Syntax

```
HRESULT     GetAutoVideoModeDetected(Boolean* detected)
```

Parameters

Name	Direction	Description
detected	out	A Boolean value indicating whether an input video mode has been detected.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support auto video mode.
E_POINTER	The detected parameter is invalid.

2.3.2.29 IBMDSwitcher::SetAutoVideoMode method

The GetTimeCode method is used to enable or disable auto video mode.

Syntax

```
HRESULT     SetAutoVideoMode(Boolean enabled)
```

Parameters

Name	Direction	Description
enabled	in	A Boolean value indicating whether auto video mode should be enabled.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support auto video mode.

2.3.2.30 IBMDSwitcher::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID.

Syntax

```
HRESULT     CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	in	Pointer to returned interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

2.3.2.31 IBMDSwitcher::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcher object.**

Pass an object implementing the **IBMDSwitcherCallback** interface to receive callbacks.

Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.2.32 IBMDSwitcher::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.3 IBMDSwitcherCallback Interface

The **IBMDSwitcherCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcher** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherCallback** object interface is installed with **IBMDSwitcher::AddCallback** and removed with **IBMDSwitcher::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.3.1 IBMDSwitcherCallback::Notify method

The **Notify** is called when **IBMDSwitcher** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherEventType eventType, BMDSwitcherVideoMode coreVideoMode);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherEventType** that describes the type of event that has occurred.
coreVideoMode	in	Video standard for which the event was triggered. This parameter is used in **bmdSwitcherEventTypeDownConverted HDVideoModeChanged** and **bmdSwitcherEventTypeMultiViewVideo ModeChanged** event types.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.4 IBMDSwitcherInputIterator Interface

The **IBMDSwitcherInputIterator** object interface is used to enumerate the available switcher inputs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** returns an **IBMDSwitcherInputIterator** object interface when the **IID_IBMDSwitcherInputIterator** IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns the next available switcher input.
GetById	Returns a switcher input for an input Id.

2.3.4.1 IBMDSwitcherInputIterator::Next method

The **Next** method returns the next available IBMDSwitcherInput object interface.

The **IBMDSwitcherInput** object interface must be released by the caller when no longer required.

Syntax

```
HRESULT     Next (IBMDSwitcherInput** input);
```

Parameters

Name	Direction	Description
input	out	**IBMDSwitcherInput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No (more) inputs are available.
E_POINTER	The input parameter is invalid.

2.3.4.2 IBMDSwitcherInputIterator::GetById method

The **GetById** method returns the **IBMDSwitcherInput** object interface corresponding to the specified Id.

Syntax

```
HRESULT     GetById (BMDSwitcherInputId inputId, IBMDSwitcherInput** input);
```

Parameters

Name	Direction	Description
inputId	in	**BMDSwitcherInputId** of input.
input	out	**IBMDSwitcherInput** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The inputId parameter is invalid.
E_POINTER	The input parameter is invalid.

2.3.5 IBMDSwitcherInput Interface

The I**BMDSwitcherInput** object interface represents a physical switcher device.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInputIterator	IID_IBMDSwitcherInputIterator	An **IBMDSwitcherInput** interface can be obtained with **IBMDSwitcherInputIterator::Next**.

Public Member Functions	
Method	**Description**
AddCallback	Add a callback to receive input property changes.
RemoveCallback	Remove a callback.
GetInputId	Get the unique ID for this input.
GetPortType	Get the port type as a **BMDSwitcherPortType**.
GetInputAvailability	Get the outputs this input can be routed to, as a **BMDSwitcherInputAvailability** object.
SetShortName	Set the short name describing the switcher input as a string limited to 4 ASCII characters.
GetShortName	Get the short name describing the switcher input as a string limited to 4 ASCII characters.
SetLongName	Set the long name describing the switcher input as a Unicode string limited to 20 bytes.
GetLongName	Get the long name describing the switcher input as a Unicode string limited to 20 bytes.
AreNamesDefault	Determine if the long name and short name are both currently set to the factory default values.
ResetNames	Reset the long and short names for this switcher input to the factory defaults for this input.
IsProgramTallied	Returns a flag indicating whether the input is currently program tallied.
IsPreviewTallied	Returns a flag indicating whether the input is currently preview tallied.
GetAvailableExternalPortTypes	Get the available external port types as a bit mask of **BMDSwitcherExternalPortType**.
SetCurrentExternalPortType	Set the external port type for this input using a **BMDSwitcherExternalPortType**.

2.3.5.1 IBMDSwitcherInput::AddCallback method

The **AddCallback** method configures a callback to be called when a switcher input property changes.

Adding a new callback will not affect previously added callbacks. Callbacks will be called on a separate thread and in the order of their addition by **AddCallback.**

Syntax

```
HRESULT     AddCallback (IBMDSwitcherInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.5.2 IBMDSwitcherInput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object to remove.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.5.3 IBMDSwitcherInput::GetInputId method

The **GetInputId** method gets the unique Id for the switcher input.

Syntax

```
HRESULT     GetInputId (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	Unique Id for switcher input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

2.3.5.4 IBMDSwitcherInput::GetPortType method

The **GetPortType** method returns the port type of this switcher input as a **BMDSwitcherPortType**. This can be used to determine if this input is an external port (i.e. **bmdSwitcherPortTypeExternal**), or any of the internal port types such as color bars (i.e. **bmdSwitcherPortTypeColorBars**).

Syntax

```
HRESULT     GetPortType (BMDSwitcherPortType* type);
```

Parameters

Name	Direction	Description
type	out	The port type.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The type parameter is not valid.

2.3.5.5 IBMDSwitcherInput::GetInputAvailability method

The **GetInputAvailability** method determines which outputs this input can be routed to.
The available output groups are given as a bit mask of **BMDSwitcherInputAvailability**.
The value returned can be bitwise-ANDed with any **BMDSwithcherInputAvailabilty** value (e.g. **bmdSwitcherInputAvailabilityAuxOutputs**) to determine the availability of this input to that output group.

Syntax

```
HRESULT     GetInputAvailability (BMDSwitcherInputAvailability* availability);
```

Parameters

Name	Direction	Description
availability	out	The availability of the input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The availability parameter is not valid.

2.3.5.6 IBMDSwitcherInput::SetShortName method

The **SetShortName** method assigns the short name describing the switcher input as a string limited to 4 ASCII characters.

Syntax

```
HRESULT     SetShortName (string name);
```

Parameters

Name	Direction	Description
name	in	The short name for the switcher input, limited to 4 ASCII characters.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The name parameter is not a valid pointer.
E_INVALIDARG	The name parameter contains non-ASCII characters.

2.3.5.7 IBMDSwitcherInput::GetShortName method

The **GetShortName** method gets the short name describing the switcher input as a string limited to 4 ASCII characters.

Syntax

```
HRESULT     GetShortName (string* name);
```

Parameters

Name	Direction	Description
name	out	The short name for the switcher input, limited to 4 ASCII characters.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The name parameter is not a valid pointer.

2.3.5.8 IBMDSwitcherInput::SetLongName method

The **SetLongName** method sets the long name, describing the switcher input as a Unicode string in UTF-8 format with a maximum length of 20 bytes. If a string longer than 20 bytes is provided, it will be truncated to the longest valid UTF-8 string of 20 bytes or less.

Syntax

```
HRESULT     SetLongName (string name);
```

Parameters

Name	Direction	Description
name	in	The long name describing the switcher input as a Unicode string with a maximum length of 20 bytes.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The name parameter is not valid.

2.3.5.9 IBMDSwitcherInput::GetLongName method

The **GetLongName** method gets the long name for the switcher input, describing the input as a Unicode string in UTF-8 format with a maximum length of 20 bytes.

Syntax

```
HRESULT     GetLongName (string* name);
```

Parameters

Name	Direction	Description
name	out	The long name describing the switcher input as a Unicode string with a maximum length of 20 bytes.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The name parameter is not valid.

2.3.5.10 IBMDSwitcherInput::AreNamesDefault method

The **AreNamesDefault** method is used to check whether the long name and short name for this input are both set to the factory defaults.

Syntax

```
HRESULT     AreNamesDefault (bool* isDefault);
```

Parameters

Name	Direction	Description
isDefault	out	Boolean value indicating whether the long name and short name are both set to the factory defaults.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isDefault parameter is not a valid pointer.

2.3.5.11 IBMDSwitcherInput::ResetNames method

The **ResetNames** method resets the long and short names for this switcher input to the factory defaults for this input.

Syntax

```
HRESULT     ResetNames ();
```

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

2.3.5.12 IBMDSwitcherInput::IsProgramTallied method

The **IsProgramTallied** method determines whether this switcher input is currently program tallied.

Syntax

```
HRESULT     IsProgramTallied (bool* isTallied);
```

Parameters

Name	Direction	Description
isTallied	out	Flag indicating if the input is currently program tallied.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The isTallied parameter is not valid.

2.3.5.13 IBMDSwitcherInput::IsPreviewTallied method

The **IsPreviewTallied** method determines whether this switcher input is currently preview tallied.

Syntax

```
HRESULT     IsPreviewTallied (bool* isTallied);
```

Parameters

Name	Direction	Description
isTallied	out	Flag indicating if the input is currently preview tallied.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The isTallied parameter is not valid.

2.3.5.14 IBMDSwitcherInput::GetAvailableExternalPortTypes method

The **GetAvailableExternalPortTypes** method gets the available external port types for this switcher input, given as a bit mask of **BMDSwitcherExternalPortType**. This bit mask can be bitwise-ANDed with any value of **BMDSwitcherExternalPortType** (e.g. **bmdSwitcherExternalPortTypeSDI**) to determine if that external port type is available for this input.

Syntax

```
HRESULT     GetAvailableExternalPortTypes (BMDSwitcherExternalPortType* types);
```

Parameters

Name	Direction	Description
types	out	The available external port types for this switcher input as a bit mask of **BMDSwitcherExternalPortType**.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The types parameter is not valid.

2.3.5.15 IBMDSwitcherInput::SetCurrentExternalPortType method

The **SetCurrentExternalPortType** method sets the external port type for this input using a **BMDSwitcherExternalPortType**. The external port type is settable only for some inputs and not all external port types are valid for a given input. Call the **GetAvailableExternalPortTypes** function to determine the available external port types for this input.

Syntax

```
HRESULT     SetCurrentExternalPortType (BMDSwitcherExternalPortType type);
```

Parameters

Name	Direction	Description
type	in	The external port type.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	The type parameter is not valid a valid external port type for this input.

2.3.6 IBMDSwitcherInputCallback Interface

The **IBMDSwitcherInputCallback** object interface is a callback class which is called when a switcher input event such as a property change occurs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInput	IID_IBMDSwitcherInput	An **IBMDSwitcherInputCallback** object interface may be installed with **IBMDSwitcherInput::AddCallback**

Public Member Functions	
Method	**Description**
Notify	A Switcher Input event occurred such as a property change.

2.3.6.1 IBMDSwitcherInputCallback::Notify method

The **Notify** method is called when a **IBMDSwitcherInput** events occur, such as property changes. This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherInputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherInputEventType** that describes the type of event that has occurred.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

2.3.7 IBMDSwitcherMixEffectBlockIterator Interface

The **IBMDSwitcherMixEffectBlockIterator** object interface is used to enumerate the available mix effect blocks.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** returns an **IBMDSwitcherMixEffectBlockIterator** object interface when the **IID_IBMDSwitcherMixEffectBlockIterator** IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns the next available switcher mix effect block.

2.3.7.1 IBMDSwitcherMixEffectBlockIterator::Next method

The **Next** method returns the next available **IBMDSwitcherMixEffectBlock** object interface.

The **IBMDSwitcherMixEffectBlock** object interface must be released by the caller when no longer required.

Syntax

```
HRESULT    Next (IBMDSwitcherMixEffectBlock** mixEffectBlock);
```

Parameters

Name	Direction	Description
mixEffectBlock	out	**IBMDSwitcherMixEffectBlock** object interface

Return Values

Value	Description
S_OK	Success.
S_FALSE	No (more) mix effect blocks are available.
E_POINTER	The mixEffectBlock parameter is invalid.

2.3.8 IBMDSwitcherMixEffectBlock Interface

The **IBMDSwitcherMixEffectBlock** object interface represents a mix effect block of a switcher device.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixEffect BlockIterator	IID_IBMDSwitcherMixEffect BlockIterator	**IBMDSwitcherMixEffectBlockIterator::Next** returns **IBMDSwitcherMixEffectBlock** object interfaces for each available mix effect block of a switcher device.

Public Member Functions	
Method	**Description**
GetProgramInput	Get the current program input.
SetProgramInput	Set the program input.
GetPreviewInput	Get the current preview input.
SetPreviewInput	Set the preview input.
GetPreviewLive	Get the current preview-live flag.
GetPreviewTransition	Get the current preview-transition flag.
SetPreviewTransition	Set the preview-transition flag.
PerformAutoTransition	Initiate an automatic transition.
PerformCut	Initiate a cut.
GetInTransition	Get the current in-transition flag.
GetTransitionPosition	Get the current transition position value.
SetTransitionPosition	Set the transition position value.
GetTransitionFramesRemaining	Get the number of transition frames remaining.
PerformFadeToBlack	Initiate a fade to black.
GetFadeToBlackRate	Get the current fade to black rate value.
SetFadeToBlackRate	Set the fade to black rate value.
GetFadeToBlackFramesRemaining	Get the current number of fade to black frames remaining.
GetFadeToBlackFullyBlack	Get the current fade-to-black-fully-black flag.
SetFadeToBlackFullyBlack	Set the fade-to-black-fully-black flag.
GetInFadeToBlack	Get the current in-fade-to-black flag.
GetFadeToBlackInTransition	Get the current fade-to-black-in-transition flag.
GetInputAvailabilityMask	Get the switcher input availability mask.
CreateIterator	Create an iterator.
AddCallback	Add a callback to receive mix effect block events.
RemoveCallback	Remove a callback.

2.3.8.1 IBMDSwitcherMixEffectBlock::GetProgramInput method

The **GetProgramInput** method returns the current program input to the mix effect block.

Syntax

```
HRESULT     GetProgramInput (BMDSwitcherInputId* value);
```

Parameters

Name	Direction	Description
value	out	The program input currently applied to the mix effect block.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.2 IBMDSwitcherMixEffectBlock::SetProgramInput method

The **SetProgramInput** method sets the program input to apply to the mix effect block.

Syntax

```
HRESULT     SetProgramInput (BMDSwitcherInputId value);
```

Parameters

Name	Direction	Description
value	in	The program input to apply to the mix effect block.

Return Values

Value	Description
S_OK	Success.
E_F AIL	Failure
E_INVALIDARG	The value is not a valid identifier.

2.3.8.3 IBMDSwitcherMixEffectBlock::GetPreviewInput method

The **GetPreviewInput** method returns the current preview input to the mix effect block.

Syntax

```
HRESULT     GetPreviewInput (BMDSwitcherInputId* value);
```

Parameters

Name	Direction	Description
value	out	The preview input currently applied to the mix effect block.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.4 IBMDSwitcherMixEffectBlock::SetPreviewInput method

The **SetPreviewInput** method sets the preview input to apply to the mix effect block.

Syntax

```
HRESULT     SetPreviewInput (BMDSwitcherInputId value);
```

Parameters

Name	Direction	Description
value	in	The preview input to apply to the mix effect block

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The value is not a valid identifier.

2.3.8.5 IBMDSwitcherMixEffectBlock::GetPreviewLive method

The **GetPreviewLive** method indicates whether the preview is live.

Syntax

```
HRESULT     GetPreviewLive (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The preview live flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.6 IBMDSwitcherMixEffectBlock::GetPreviewTransition method

The **GetPreviewTransition** method indicates whether the preview transition mode is currently enabled on the mix effect block.

Syntax

```
HRESULT     GetPreviewTransition (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The current preview transition flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.7 IBMDSwitcherMixEffectBlock::SetPreviewTransition method

The **SetPreviewTransition** method is used to enable or disable the preview transition mode.

Syntax

```
HRESULT     SetPreviewTransition (boolean value);
```

Parameters

Name	Direction	Description
value	in	The desired preview transition flag

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.8.8 IBMDSwitcherMixEffectBlock::PerformAutoTransition method

The **PerformAutoTransition** method initiates an automatic transition for the mix effect block.

When the transition begins and ends the **bmdSwitcherMixEffectBlockEventTypeInTransitionChanged** callback will be fired with the in transition flag set to true and then false on completion. Throughout the transition the **bmdSwitcherMixEffectBlockEventTypeTransitionPositionChanged** and **bmdSwitcherMixEffectBlockEventTypeTransitionFramesRemainingChanged** callbacks will be fired with property values corresponding to the progress through the transition.

Syntax

```
HRESULT     PerformAutoTransition ();
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.8.9 IBMDSwitcherMixEffectBlock::PerformCut method

The **PerformCut** method initiates a cut for the mix effect block.

Syntax

```
HRESULT     PerformCut ();
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.8.10 IBMDSwitcherMixEffectBlock::GetInTransition method

The **GetInTransition** method indicates whether a transition is occurring

Syntax

```
HRESULT     GetInTransition (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The current in transition flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.11 IBMDSwitcherMixEffectBlock::GetTransitionPosition method

The **GetTransitionPosition** method returns the current transition position value.

Syntax

```
HRESULT     GetTransitionPosition (double* value);
```

Parameters

Name	Direction	Description
value	out	The current transition position value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.12 IBMDSwitcherMixEffectBlock::SetTransitionPosition method

The **SetTransitionPosition** method sets the transition position value.

Syntax

```
HRESULT     SetTransitionPosition (double value);
```

Parameters

Name	Direction	Description
value	in	The desired transition position value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Fail.

2.3.8.13 IBMDSwitcherMixEffectBlock::GetTransitionFramesRemaining method

The **GetTransitionFramesRemaining** method returns the number of transition frames remaining for the transition.

Syntax

```
HRESULT     GetTransitionFramesRemaining (uint32_t* value);
```

Parameters

Name	Direction	Description
value	out	The number of transition frames remaining.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid..

2.3.8.14 IBMDSwitcherMixEffectBlock::PerformFadeToBlack method

The **PerformFadeToBlack** method initiates a fade to black for the mix effect block.

When the fade to black begins and ends the **bmdSwitcherMixEffectBlockEventTypeInFadeToBlackChanged** callback will be fired with the in fade to black flag set to true and then false on completion. Throughout the transition the **bmdSwitcherMixEffectBlockEventTypeFadeToBlackFramesRemainingChanged** callback will be fired with values corresponding to the progress through the fade to black.

Syntax

```
HRESULT     PerformFadeToBlack ();
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.8.15 IBMDSwitcherMixEffectBlock::GetFadeToBlackRate method

The **GetFadeToBlackRate** method returns the current fade to black rate in frames.

Syntax

```
HRESULT     GetFadeToBlackRate (uint32_t* value)
```

Parameters

Name	Direction	Description
value	out	The current fade to black rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.16 IBMDSwitcherMixEffectBlock::SetFadeToBlackRate method

The **SetFadeToBlackRate** method returns the number of frames remaining for the fade to black.

Syntax

```
HRESULT     SetFadeToBlackRate (uint32_t value);
```

Parameters

Name	Direction	Description
value	in	The desired fade to black rate.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The value is not a valid number of frames.

2.3.8.17 IBMDSwitcherMixEffectBlock::GetFadeToBlackFramesRemaining method

The **GetFadeToBlackFramesRemaining** method returns the number of frames remaining for the fade to black.

Syntax

```
HRESULT     GetFadeToBlackFramesRemaining (uint32_t* value);
```

Parameters

Name	Direction	Description
value	out	The number of fade to black frames remaining.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.18 IBMDSwitcherMixEffectBlock::GetFadeToBlackFullyBlack method

The **GetFadeToBlackFullyBlack** method indicates whether the current frame is completely black.

Syntax

```
HRESULT     GetFadeToBlackFullyBlack (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The current fade to black fully black flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.19 IBMDSwitcherMixEffectBlock::SetFadeToBlackFullyBlack method

The **SetFadeToBlackFullyBlack** method sets the fade to black fully black flag.

Syntax

```
HRESULT     SetFadeToBlackFullyBlack (boolean value);
```

Parameters

Name	Direction	Description
value	in	The desired fade to black fully black flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.8.20 IBMDSwitcherMixEffectBlock::GetInFadeToBlack method

The **GetInFadeToBlack** method indicates whether fade to black is transitioning or the frame is completely black.

Syntax

```
HRESULT     GetInFadeToBlack (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The current in fade to black flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.21 IBMDSwitcherMixEffectBlock::GetFadeToBlackInTransition method

The **GetFadeToBlackInTransition** method indicates whether fade to black is transitioning.

Syntax

```
HRESULT     GetFadeToBlackInTransition (boolean* value);
```

Parameters

Name	Direction	Description
value	out	The current fade to black in transition flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

2.3.8.22 IBMDSwitcherMixEffectBlock::GetInputAvailabilityMask method

The **GetInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for this mix effect block. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use by this mix effect block.

Syntax

```
HRESULT     GetInputAvailabilityMask (BMDSwitcherInputAvailability* value);
```

Parameters

Name	Direction	Description
value	out	The availability of the input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.
E_FAIL	Failure.

2.3.8.23 IBMDSwitcherMixEffectBlock::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID.

Syntax

```
HRESULT     CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

2.3.8.24 IBMDSwitcherMixEffectBlock::AddCallback method

The **AddCallback** method configures a callback to be called when a mix effect block property changes.

Adding a new callback will not affect previously added callbacks. Callbacks will be called on a separate thread and in the order of their addition by **AddCallback**.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherMixEffectBlockCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMixEffectBlockCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.8.25 IBMDSwitcherMixEffectBlock::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherMixEffectBlockCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object to remove.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.9 IBMDSwitcherMixEffectBlockCallback Interface

The **IBMDSwitcherMixEffectBlockCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherMixEffectBlock** object.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixEffectBlock	IID_ IBMDSwitcherMixEffectBlock	An **IBMDSwitcherMixEffectBlockCallback** object interface is installed with **IBMDSwitcherMixEffectBlock::AddCallback** and removed with **IBMDSwitcherMixEffectBlock::RemoveCallback.**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.9.1 IBMDSwitcherMixEffectBlockCallback::Notify method

The **Notify** method is called when **IBMDSwitcherMixEffectBlock** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherMixEffectBlockEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMixEffectBlockEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.10 IBMDSwitcherInputColor Interface

The **IBMDSwitcherInputColor** object interface is used for managing a color generator input port.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInput	IID_IBMDSwitcherInput	An **IBMDSwitcherInputColor** object interface can be obtained with **IBMDSwitcherInput::QueryInterface**.

Public Member Functions	
Method	**Description**
GetHue	Get the current hue value.
SetHue	Set the hue value.
GetSaturation	Get the current saturation value.
SetSaturation	Set the saturation value.
GetLuma	Get the current luminance value.
SetLuma	Set the luminance value.
AddCallback	Add a color input callback.
RemoveCallback	Remove a color input callback.

2.3.10.1 IBMDSwitcherInputColor::GetHue method

The **GetHue** method gets the current hue value.

Syntax

```
HRESULT     GetHue (double* hue);
```

Parameters

Name	Direction	Description
propertyId	in	Id of the property that changed as a **BMDSwitcherMixEffectBlockPropertyId**

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

2.3.10.2 IBMDSwitcherInputColor::SetHue method

The **SetHue** method sets the hue value.

Syntax

```
HRESULT     SetHue (double hue);
```

Parameters

Name	Direction	Description
hue	in	The desired hue value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.10.3 IBMDSwitcherInputColor::GetSaturation method

The **GetSaturation** method gets the current hue value.

Syntax

```
HRESULT     GetSaturation (double* sat);
```

Parameters

Name	Direction	Description
sat	out	The current sat value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The sat parameter is invalid.

2.3.10.4 IBMDSwitcherInputColor::SetSaturation method

The **SetSaturation** method sets the hue value.

Syntax

```
HRESULT     SetSaturation (double sat);
```

Parameters

Name	Direction	Description
sat	in	The desired saturation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.10.5 IBMDSwitcherInputColor::GetLuma method

The **GetLuma** method gets the current luminance value.

Syntax

```
HRESULT     GetLuma (double* luma);
```

Parameters

Name	Direction	Description
luma	out	The current luminance value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The luma parameter is invalid.

2.3.10.6 IBMDSwitcherInputColor::SetLuma method

The **SetLuma** method sets the luminance value.

Syntax

```
HRESULT     SetLuma (double luma);
```

Parameters

Name	Direction	Description
luma	in	The desired luminance value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.10.7 IBMDSwitcherInputColor::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherInputColor** object. Pass an object implementing the **IBMDSwitcherInputColorCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherInputColorCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputColorCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.10.8 IBMDSwitcherInputColor::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherInputColorCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputColorCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.11 IBMDSwitcherInputColorCallback Interface

The **IBMDSwitcherInputColorCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherInputColor** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInputColor	IID_IBMDSwitcherInputColor	An **IBMDSwitcherInputColorCallback** object interface is installed with **IBMDSwitcherInputColor::AddCallback** and removed with **IBMDSwitcherInputColor::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.11.1 IBMDSwitcherInputColorCallback::Notify method

The Notify method is called when **IBMDSwitcherInputColor** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify (BMDSwitcherInputColorEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherInputColorEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.12 IBMDSwitcherInputAux Interface

The **IBMDSwitcherInputAux** object interface is used for managing an auxiliary output port.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInput	IID_IBMDSwitcherInput	An **IBMDSwitcherInputAux** object interface can be obtained with **IBMDSwitcherInput::QueryInterface.**

Public Member Functions	
Method	**Description**
GetInputSource	Get the selected input source.
SetInputSource	Select the input source.
GetInputAvailabilityMask	Get the corresponding **BMDSwitcherInputAvailability** bit value for auxiliary port.
AddCallback	Add an aux callback.
RemoveCallback	Remove an aux callback.

2.3.12.1 IBMDSwitcherInputAux::GetInputSource method

The **GetInputSource** method returns the currently selected input source.

Syntax

```
HRESULT     GetInputSource (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	The **BMDSwitcherInputId** of the selected input source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid inputId parameter.

2.3.12.2 IBMDSwitcherInputAux::SetInputSource method

The **SetInputSource** method selects an input source for this auxiliary port.

Syntax

```
HRESULT     SetInputSource (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	The **BMDSwitcherInputId** of the desired input source.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Invalid inputId parameter.
E_FAIL	Failure.

2.3.12.3 IBMDSwitcherInputAux::GetInputAvailabilityMask method

The **GetInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for this auxiliary port. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use by this auxiliary port.

Syntax

```
HRESULT     GetInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

2.3.12.4 IBMDSwitcherInputAux::AddCallback method

The AddCallback method configures a callback to be called when events occur for an **IBMDSwitcherInputAux** object. Pass an object implementing the **IBMDSwitcherInputAuxCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherInputAuxCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputAuxCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.12.5 IBMDSwitcherInputAux::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherInputAuxCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputAuxCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.13 IBMDSwitcherInputAuxCallback Interface

The **IBMDSwitcherInputAuxCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherInputAux** object.
Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInputAux	IID_IBMDSwitcherInputAux	An **IBMDSwitcherInputAuxCallback** object interface is installed with **IBMDSwitcherInputAux::AddCallback** and removed with **IBMDSwitcherInputAux::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.13.1 IBMDSwitcherInputAuxCallback::Notify method

The **Notify** method is called when **IBMDSwitcherInputAux** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherInputAuxEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherInputAuxEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.14 IBMDSwitcherMultiViewIterator Interface

The **IBMDSwitcherMultiViewIterator** is used to enumerate the available MultiViews.

A reference to an **IBMDSwitcherMultiViewIterator** object interface may be obtained from an **IBMDSwitcher** object interface using the CreateIterator method. Pass **IID_IBMDSwitcherMultiViewIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** can return an **IBMDSwitcherMultiViewIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherMultiView** object interface.

2.3.14.1 IBMDSwitcherMultiViewIterator::Next method

The **Next** method returns the next available **IBMDSwitcherMultiView** object interface.

Syntax

```
HRESULT     Next (IBMDSwitcherMultiView** multiView);
```

Parameters

Name	Direction	Description
multiView	out	**IBMDSwitcherMultiView** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherMultiView** objects available.
E_POINTER	The multiView parameter is invalid.

2.3.15 IBMDSwitcherMultiView Interface

The **IBMDSwitcherMultiView** object interface is used for accessing control functions of a MultiView output, such as setting up the layout format, or routing different inputs to windows.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMultiViewIterator	IID_ IBMDSwitcherMultiViewIterator	An **IBMDSwitcherMultiView** object will be returned after a successful call to **IBMDSwitcherMultiViewIterator::Next method**.

Public Member Functions	
Method	**Description**
CanChangeLayout	Determine if the Multiview supports layout changing.
GetLayout	Get the current layout format.
SetLayout	Set layout format.
SupportsQuadrantLayout	Determine if this MultiView supports quadrant layout.
GetWindowInput	Get current input routing of a window.
SetWindowInput	Set input routing of a window.
GetWindowCount	Get number of windows available.
GetInputAvailabilityMask	Get the corresponding **BMDSwitcherInputAvailability** bit value for MultiView.
CanRouteInputs	Determine if this MultiView supports custom input-to-window routing.
SupportsVuMeters	Determine if this switcher supports the display of VU meters on the MultiView.
CurrentInputSupportsVuMeter	Check if the current input of a specified MultiView window supports VU meters.
GetVuMeterEnabled	Check if the VU meter is currently visible on a specified window.
SetVuMeterEnabled	Hide or show the VU meter on a specified window.
CanAdjustVuMeterOpacity	Determine if this MultiView supports changing the VU meter opacity.
GetVuMeterOpacity	Get the current MultiView VU meter opacity.
SetVuMeterOpacity	Set the MultiView VU meter opacity.
CanToggleSafeAreaEnabled	Determine if this MultiView supports toggling the safe area overlay on and off.
CurrentInputSupportsSafeArea	Determine if a MultiView window supports displaying the safe area overlay.
GetSafeAreaEnabled	Check if the safe area overlay is currently visible.
SetSafeAreaEnabled	Hide or show the safe area overlay.
SupportsProgramPreviewSwap	Determine if this MultiView supports swapping the positions of the program and preview windows.
GetProgramPreviewSwapped	Check if the program and preview window positions are currently swapped.
SetProgramPreviewSwapped	Set the program and preview window positions to standard or swapped.
AddCallback	Add a MultiView callback.
RemoveCallback	Remove a MultiView callback.

2.3.15.1 IBMDSwitcherMultiView::CanChangeLayout method

The **CanChangeLayout** method is used to determine if the switcher supports changing the MultiView window layout.

Most switchers are capable of changing the layout of the windows displayed in the MultiView.

Syntax

```
HRESULT     CanChangeLayout(Boolean* canChangeLayout)
```

Parameters

Name	Direction	Description
canChangeLayout	out	A Boolean value indicating whether the switcher supports changing the MultiView layout.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The **canChangeLayout** parameter is invalid.

2.3.15.2 IBMDSwitcherMultiView::GetLayout method

The **GetLayout** method returns the current layout format.

Syntax

```
HRESULT     GetLayout (BMDSwitcherMultiViewLayout* layout);
```

Parameters

Name	Direction	Description
layout	out	Current layout format as a **BMDSwitcherMultiViewLayout**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The layout parameter is invalid.

2.3.15.3 IBMDSwitcherMultiView::SetLayout method

The **SetLayout** method sets the layout format.

If the switcher supports quadrant layout, then **bmdSwitcherMultiViewLayoutTopLeftSmall**, **bmdSwitcherMultiViewLayoutTopRightSmall**, **bmdSwitcherMultiViewLayoutBottomLeftSmall**, and **bmdSwitcherMultiViewLayoutBottomRightSmall** are bitmask fields that can be bitwise-ORed in any combination to describe which quadrants should show four small windows. If the bit for a quadrant is not set, the quadrant will display a large window.

If a switcher does not support quadrant layout, then only **bmdSwitcherMultiViewLayoutProgramTop**, **bmdSwitcherMultiViewLayoutProgramBottom**, **bmdSwitcherMultiViewLayoutProgramLeft**, and **bmdSwitcherMultiViewLayoutProgramRight** are valid.

Syntax

```
HRESULT     SetLayout (BMDSwitcherMultiViewLayout* layout);
```

Parameters

Name	Direction	Description
layout	in	Desired layout format in **BMDSwitcherMultiViewLayout**.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Failure.
E_POINTER	Invalid layout parameter.

2.3.15.4 IBMDSwitcherMultiView::SupportsQuadrantLayout method

The **SupportsQuadrantLayout** method is used to determine if the switcher supports quadrant layout.

Some switchers are capable of configuring each quadrant of the MultiView as either one large window or four small windows. Switchers that are not capable of independent quadrant configuration are still capable of displaying the classic ten window configuration which is made up of two large windows either at the top, bottom, left or right side of the display and eight small windows in the remaining area of the display.

Syntax

```
HRESULT     SupportsQuadrantLayout(boolean* supportsQuadrantLayout)
```

Parameters

Name	Direction	Description
supportsQuadrantLayout	out	Boolean value indicating whether quadrant layout is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsQuadrantLayout parameter is invalid.

2.3.15.5 IBMDSwitcherMultiView::GetWindowInput method

The **GetWindowInput** method returns the current input source routed to the specified window.

Syntax

```
HRESULT     GetWindowInput (uint32_t window, BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
inputId	out	Input source as a **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The window parameter is invalid.
E_POINTER	The inputId parameter is invalid.

2.3.15.6 IBMDSwitcherMultiView::SetWindowInput method

The **SetWindowInput** method routes an input source to the specified window. Note that the inputs for windows 0 and 1 are reserved for the Preview and Program outputs, and so cannot be set using this method. Calling this method with a window index of 0 or 1 will do nothing and will return S_FALSE.

Syntax

```
HRESULT     SetWindowInput (uint32_t window, BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index. Values of 0 and 1 are ignored.
inputId	in	**BMDSwitcherInputId** input source.

Return Values

Value	Description
S_OK	Success.
S_FALSE	The input for the specified window cannot be set using this method.
E_FAIL	Failure.
E_INVALIDARG	The window and/or inputId parameter is invalid.

2.3.15.7 IBMDSwitcherMultiView::GetWindowCount method

The **GetWindowCount** method returns the total number of windows available to this MultiView.

Syntax

```
HRESULT     GetWindowCount (uint32_t* windowCount);
```

Parameters

Name	Direction	Description
windowCount	out	Total number of windows.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The windowCount parameter is invalid.

2.3.15.8 IBMDSwitcherMultiView::GetInputAvailabilityMask method

The **GetInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for this MultiView. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for viewing in a window.

Syntax

```
HRESULT     GetInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

2.3.15.9 IBMDSwitcherMultiView::CanRouteInputs method

The **CanRouteInputs** method returns whether this MultiView has custom input-to-window routing capability. This feature allows custom selection of input sources on each window, whereas without this feature the configuration is static and the window input sources cannot be changed. If the MultiView has no such capability, any call to **SetWindowInput** will fail.

Syntax

```
HRESULT     CanRouteInputs (boolean* canRoute);
```

Parameters

Name	Direction	Description
canRoute	out	Boolean that indicates if this MultiView is capable of custom input-to-window routing.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canRoute parameter is invalid.

2.3.15.10 IBMDSwitcherMultiView::SupportsVuMeters method

The **SupportsVuMeters** method is used to determine if the switcher supports the display of VU meters on the MultiView.

Syntax

```
HRESULT     SupportsVuMeters (boolean* supportsVuMeters);
```

Parameters

Name	Direction	Description
supportsVuMeters	out	Boolean value indicating whether VU meters are supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsVuMeters parameter is not a valid pointer.

2.3.15.11 IBMDSwitcherMultiView::CurrentInputSupportsVuMeter method

The **CurrentInputSupportsVuMeter** method is used to determine if a MultiView window is currently set to an input that supports the display of a VU meter. Some inputs, such as Color Bars and Color Generators do not support the display of a VU meter.

Syntax

```
HRESULT     CurrentInputSupportsVuMeter (int32_t window, boolean* supportsVuMeter);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
supportsVuMeter	out	Boolean value indicating whether display of a VU meter is supported by the input that is currently selected on the specified window.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support VU meters.
E_POINTER	The supportsVuMeter parameter is not a valid pointer.
E_INVALIDARG	The window parameter is not a valid window index.

2.3.15.12 IBMDSwitcherMultiView::GetVuMeterEnabled method

The **GetVuMeterEnabled** method is used to determine if the the VU meter is currently visible on the specified MultiView window.

Syntax

```
HRESULT     GetVuMeterEnabled (uint32_t window, boolean* enabled);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
enabled	out	Boolean value indicating whether the VU meter is currently visible on the specified window.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support VU meters.
E_POINTER	The enabled parameter is not a valid pointer.
E_INVALIDARG	The window parameter is not a valid window index.

2.3.15.13 IBMDSwitcherMultiView::SetVuMeterEnabled method

The **SetVuMeterEnabled** method is used to hide or show VU meters on the specified MultiView window.

Syntax

```
HRESULT     SetVuMeterEnabled (uint32_t window, boolean enabled);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
enabled	in	Boolean value indicating whether VU meters should be made visible on the specified window.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support VU meters.
E_INVALIDARG	The window parameter is not a valid window index.

2.3.15.14 IBMDSwitcherMultiView::CanAdjustVuMeterOpacity method

The **CanAdjustVuMeterOpacity** method is used to determine if the switcher supports changing the MultiView window VU meter opacity.

Syntax

```
HRESULT     CanAdjustVuMeterOpacity(Boolean* canAdjustVuMeterOpacity)
```

Parameters

Name	Direction	Description
canAdjustVuMeterOpacity	out	Boolean value indicating whether the switcher supports changing the VU meter opacity.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canAdjustVuMeterOpacity parameter is invalid.
E_FAIL	Failure.

2.3.15.15 IBMDSwitcherMultiView::GetVuMeterOpacity method

The **GetVuMeterOpacity** method returns the opacity of the VU meters displayed on the MultiView as a value between zero and one. A value of 0.0 is fully transparent, and a value of 1.0 is fully opaque.

Syntax

```
HRESULT     GetVuMeterOpacity (double* opacity);
```

Parameters

Name	Direction	Description
opacity	out	The opacity of the VU meters from 0.0 (fully transparent) to 1.0 (fully opaque).

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support VU meters.
E_POINTER	The opacity parameter is not a valid pointer.

2.3.15.16 IBMDSwitcherMultiView::SetVuMeterOpacity method

The **SetVuMeterOpacity** method is used to set the opacity of the VU meters displayed on the MultiView.

Syntax

```
HRESULT     SetVuMeterOpacity (double opacity);
```

Parameters

Name	Direction	Description
opacity	in	The opacity of the VU meters from 0.0 (fully transparent) to 1.0 (fully opaque).

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support VU meters.

2.3.15.17 IBMDSwitcherMultiView::CanToggleSafeAreaEnabled method

The **CanToggleSafeAreaEnabled** method is used to determine whether the switcher supports toggling the safe area overlay on the MultiView preview window on and off.

Syntax

```
HRESULT    CanToggleSafeAreaEnabled (boolean* canToggleSafeAreaEnabled);
```

Parameters

Name	Direction	Description
canToggleSafeAreaEnabled	out	A Boolean value indicating whether the switcher supports toggling the safe area overlay on and off.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canToggleSafeAreaEnabled parameter is not a valid pointer.

2.3.15.18 IBMDSwitcherMultiView::CurrentInputSupportsSafeArea method

The **CurrentInputSupportsSafeArea** method is used to determine if a MultiView window supports displaying the safe area overlay. Only large windows whose input is set to a preview output will support displaying the safe area overlay.

Syntax

```
HRESULT    CurrentInputSupportsSafeArea (uint32_t window, boolean* supportsSafeArea)
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
supportsSafeArea	out	Boolean value indicating whether display of a the safe area is supported by the input that is currently selected on the specified window.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsSafeArea parameter is invalid.
E_INVALIDARG	The window parameter is not a valid window index.
E_FAIL	Failure. This can happen if the switcher does not support toggling the safe area overlay on and off.

2.3.15.19 IBMDSwitcherMultiView::GetSafeAreaEnabled method

The **GetSafeAreaEnabled** method is used to determine whether the safe area overlay is currently visible on the MultiView window.

Syntax

```
HRESULT     GetSafeAreaEnabled (uint32_t window, boolean* enabled);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
enabled	out	A Boolean value indicating whether the safe area overlay is currently visible on the MultiView window.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is not a valid pointer.
E_INVALIDARG	The window parameter is not a valid window index.

2.3.15.20 IBMDSwitcherMultiView::SetSafeAreaEnabled method

The **SetSafeAreaEnabled** method is used to hide or show the safe area overlay on the MultiView window.

Syntax

```
HRESULT     SetSafeAreaEnabled (uint32_t window, boolean* enabled);
```

Parameters

Name	Direction	Description
window	in	Zero-based window index.
enabled	in	A Boolean value indicating whether the safe area overlay should be made visible on the MultiView window.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.
E_INVALIDARG	The window parameter is not a valid window index.
E_FAIL	Failure. This can happen if the switcher does not support toggling the safe area overlay on and off.

2.3.15.21 IBMDSwitcherMultiView::SupportsProgramPreviewSwap method

The **SupportsProgramPreviewSwap** method is used to determine if the switcher supports swapping the positions of the program and preview windows on the MultiView. Standard positioning places the preview window to the left of or above the program window. Swapping places the preview window to the right of or below the program window.

Syntax

```
HRESULT     SupportsProgramPreviewSwap (boolean* supportsProgramPreviewSwap);
```

Parameters

Name	Direction	Description
supportsProgramPreviewSwap	out	A Boolean value indicating whether the switcher supports swapping the program and preview window positions on the MultiView.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsProgramPreviewSwap parameter is not a valid pointer.

2.3.15.22 IBMDSwitcherMultiView::GetProgramPreviewSwapped method

The **GetProgramPreviewSwapped** method is used to determine if the MultiView program and preview window positions are currently swapped.

Syntax

```
HRESULT     GetProgramPreviewSwapped (boolean* swapped);
```

Parameters

Name	Direction	Description
swapped	out	A Boolean value indicating whether the program and preview window positions are currently swapped.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The swapped parameter is not a valid pointer.

2.3.15.23 IBMDSwitcherMultiView::SetProgramPreviewSwapped method

The **SetProgramPreviewSwapped** method is used to specify whether the MultiView program and preview window positions should be swapped.

Syntax

```
HRESULT     SetProgramPreviewSwapped (boolean swapped);
```

Parameters

Name	Direction	Description
swapped	in	A Boolean value indicating whether the program and preview window positions should be swapped.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the switcher does not support swapping the positions of the program and preview windows.

2.3.15.24 IBMDSwitcherMultiView::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherMultiView** object. Pass an object implementing the **IBMDSwitcherMultiViewCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherMultiViewCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMultiViewCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.15.25 IBMDSwitcherMultiView::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherMultiViewCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMultiViewCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.16 IBMDSwitcherMultiViewCallback Interface

The **IBMDSwitcherMultiViewCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherMultiView** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMultiView	IID_IBMDSwitcherMultiView	An **IBMDSwitcherMultiViewCallback** object interface is installed with **IBMDSwitcherMultiView::AddCallback** and removed with **IBMDSwitcherMultiView::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.16.1 IBMDSwitcherMultiViewCallback::Notify method

The **Notify** method is called when **IBMDSwitcherMultiView** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherMultiViewEventType eventType, int32_t window);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMultiViewEventType** that describes the type of event that has occurred.
window	in	This parameter is only valid when eventType is **bmdSwitcherMultiViewEventTypeWindowChanged**, it specifies the window index that was changed.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.17 IBMDSwitcherSerialPortIterator Interface

The **IBMDSwitcherSerialPortIterator** object interface is used to enumerate the available serial ports on the switcher.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** returns an **IBMDSwitcherSerialPortIterator** interface when the **IID_IBMDSwitcherSerialPortIterator** IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns the next available serial port.

2.3.17.1 IBMDSwitcherSerialPortIterator::Next method

The Next method returns the next available **IBMDSwitcherSerialPort** object interface.

The **IBMDSwitcherSerialPort** object interface must be released by the caller when no longer required.

Syntax

```
HRESULT     Next (IBMDSwitcherSerialPort** serialPort);
```

Parameters

Name	Direction	Description
serialPort	out	**IBMDSwitcherSerialPort** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No (more) serial ports available.
E_POINTER	The serialPort parameter is invalid.

2.3.18 IBMDSwitcherSerialPort Interface

The **IBMDSwitcherSerialPort** object interface is used for managing a serial port on the switcher.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherSerialPortIterator	IID_IBMDSwitcherSerialPortIterator	**IBMDSwitcherSerialPortIterator::Next** returns **IBMDSwitcherSerialPort** interfaces for each available serial port of a switcher device.

Public Member Functions	
Method	**Description**
SetFunction	Set the function of the serial port using a **BMDSwitcherSerialPortFunction**.
GetFunction	Returns the function of the serial port as a **BMDSwitcherSerialPortFunction**.
DoesSupportFunction	Check if a given **BMDSwitcherSerialPortFunction** is supported by the switcher.
AddCallback	Add a serial port callback.
RemoveCallback	Remove a serial port callback.

2.3.18.1 IBMDSwitcherSerialPort::SetFunction method

The **SetFunction** method sets the function of the serial port.

Syntax

```
HRESULT     SetFunction (BMDSwitcherSerialPortFunction function);
```

Parameters

Name	Direction	Description
function	in	The function to which the serial port should be set.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The function parameter is not a valid serial port function.

2.3.18.2 IBMDSwitcherSerialPort::GetFunction method

The **GetFunction** method returns the current function of the serial port.

Syntax

```
HRESULT     GetFunction (BMDSwitcherSerialPortFunction* function);
```

Parameters

Name	Direction	Description
function	out	A **BMDSwitcherSerialPortFunction** describing which function the serial port is currently set to.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The function parameter is not a valid pointer.

2.3.18.3 IBMDSwitcherSerialPort::DoesSupportFunction method

The **DoesSupportFunction** method is used to determine if a given serial port function is supported by the switcher.

Syntax

```
HRESULT     DoesSupportFunction (BMDSwitcherSerialPortFunction function,
            boolean* supported);
```

Parameters

Name	Direction	Description
function	in	The serial port function being queried.
supported	out	Boolean value describing whether the specified function is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is not a valid pointer.
E_INVALIDARG	The function parameter is not a valid **BMDSwitcherSerialPortFunction**.

2.3.18.4 IBMDSwitcherSerialPort::AddCallback method

The **AddCallback** method configures a callback to be called when a switcher serial port property changes, such as a change in the serial port function.

Adding a new callback will not affect previously added callbacks.

Callbacks will be called on a separate thread and in the order of their addition by **AddCallback**.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherSerialPortCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherSerialPortCallback** interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.18.5 IBMDSwitcherSerialPort::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherSerialPortCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object to remove.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.19 IBMDSwitcherSerialPortCallback Interface

The **IBMDSwitcherSerialPortCallback** object interface is a callback class which is called when a switcher serial port event occurs, such as a change in the serial port function.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherSerialPort	IID_IBMDSwitcherSerialPort	An **IBMDSwitcherSerialPortCallback** interface may be installed with **IBMDSwitcherSerialPort::AddCalback**

Public Member Functions	
Method	**Description**
Notify	A Switcher Serial Port event occurred, such as a change in the serial port function.

2.3.19.1 IBMDSwitcherSerialPortCallback::Notify method

The **Notify** method is called when **IBMDSwitcherSerialPort** events occur, such as a change in the serial port function.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherSerialPortEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherSerialPortEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_FAIL	Failure.
S_OK	Success.

2.3.20 IBMDSwitcherMixMinusOutputIterator Interface

The **IBMDSwitcherMixMinusOutputIterator** is used to enumerate the available mix minus outputs for the switcher.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** returns an **IBMDSwitcherMixMinusOutputIterator** interface when the IID_IBMDSwitcherMixMinusOutputIterator IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherMixMinusOutput** object interface.

2.3.20.1 IBMDSwitcherMixMinusOutputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherMixMinusOutput** object interface.

The **IBMDSwitcherMixMinusOutput** object interface must be released by the caller when no longer required.

Syntax

```
HRESULT     Next (IBMDSwitcherMixMinusOutput** mixMinusOutput);
```

Parameters

Name	Direction	Description
mixMinusOutput	out	**IBMDSwitcherMixMinusOutput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No (more) mix minus outputs are available.
E_POINTER	The mixMinusOutput parameter is not a valid pointer.

2.3.21 IBMDSwitcherMixMinusOutput Interface

The **IBMDSwitcherMixMinusOutput** object interface is used for managing a mix minus output port.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixMinus OutputIterator	IID_IBMDSwitcherMixMinus OutputIterator	An **IBMDSwitcherMixMinusOutput** object will be returned after a successful call to the **IBMDSwitcherMixMinusOutputIterator::Next** method.

Public Member Functions	
Method	**Description**
GetAvailableAudioModes	Get the available mix minus output audio modes as a bit mask of **BMDSwitcherMixMinusOutputAudioMode**.
GetAudioMode	Get the current audio mode of the output as a **BMDSwitcherMixMinusOutputAudioMode**.
SetAudioMode	Set the audio mode of the output using a **BMDSwitcherMixMinusOutputAudioMode**.
HasMinusAudioInputId	Get the current has minus audio input ID flag.
GetMinusAudioInputId	Get the **BMDSwitcherAudioInputId** of the audio input that is subtracted when in mix minus audio mode.
AddCallback	Add a mix minus output callback.
RemoveCallback	Remove a mix minus output callback.

2.3.21.1 IBMDSwitcherMixMinusOutput::GetAvailableAudioModes method

The **GetAvailableAudioModes** method gets the available mix minus output audio modes for this switcher, given as a bit mask of **BMDSwitcherMixMinusOutputAudioMode**. This bit mask can be bitwise-ANDed with any value of **BMDSwitcherMixMinusOutputAudioMode** (e.g. **bmdSwitcherMixMinusOutputAudioModeProgramOut**) to determine if that mix minus output audio mode is available.

Syntax

```
HRESULT    GetAvailableAudioModes (BMDSwitcherMixMinusOutputAudioMode* audioModes)
```

Parameters

Name	Direction	Description
audioModes	out	The available mix minus output audio modes as a bit mask of BMDSwitcherMixMinusOutputAudioMode.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The audioModes parameter is invalid.

2.3.21.2 IBMDSwitcherMixMinusOutput::GetAudioMode method

The **GetAudioMode** method returns the current audio mode of the mix minus output.

Syntax

```
HRESULT    GetAudioMode (BMDSwitcherMixMinusOutputAudioMode* audioMode);
```

Parameters

Name	Direction	Description
audioMode	out	The current audio mode as a **BMDSwitcherMixMinusOutputAudioMode**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The audioMode parameter is not a valid pointer.

2.3.21.3 IBMDSwitcherMixMinusOutput::SetAudioMode method

The **SetAudioMode** method sets the audio mode of the mix minus output.

Syntax

```
HRESULT     SetAudioMode (BMDSwitcherMixMinusOutputAudioMode audioMode);
```

Parameters

Name	Direction	Description
audioMode	in	The desired audio mode in **BMDSwitcherMixMinusOutputAudioMode**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The audioMode parameter is invalid.

2.3.21.4 IBMDSwitcherMixMinusOutput::HasMinusAudioInputId method

The **HasMinusAudioInputId** method returns the current has minus audio input ID flag.

Syntax

```
HRESULT     HasMinusAudioInputId (boolean* hasMinusAudioInputId)
```

Parameters

Name	Direction	Description
hasMinusAudioInputId	out	The current has minus audio input ID flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hasMinusAudioInputId parameter is invalid.

2.3.21.5 IBMDSwitcherMixMinusOutput::GetMinusAudioInputId method

The **GetMinusAudioInputId** method gets the **BMDSwitcherAudioInputId** of the audio input that is subtracted when the output is in mix minus audio mode.

Syntax

```
HRESULT     GetMinusAudioInputId (BMDSwitcherAudioInputId* audioInputId);
```

Parameters

Name	Direction	Description
audioInputId	out	The **BMDSwitcherAudioInputId** of the audio input used for mix minus.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The audioInputId parameter is invalid.
E_FAIL	No minus audio input assigned.

2.3.21.6 IBMDSwitcherMixMinusOutput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherMixMinusOutput** object. Pass an object implementing the **IBMDSwitcherMixMinusOutputCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherMixMinusOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMixMinusOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.21.7 IBMDSwitcherMixMinusOutput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherMixMinusOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMixMinusOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

2.3.22 IBMDSwitcherMixMinusOutputCallback Interface

The **IBMDSwitcherMixMinusOutputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherMixMinusOutput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixMinus Output	IID_IBMDSwitcherMixMinus Output	An **IBMDSwitcherMixMinusOutputCallback** object interface is installed with **IBMDSwitcherMixMinusOutput::AddCallback** and removed with **IBMDSwitcherMixMinusOutput::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

2.3.22.1 IBMDSwitcherMixMinusOutputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherMixMinusOutput** events occur, such as audio mode changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherMixMinusOutputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMixMinusOutputEventType** that describes the type of event that occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

2.3.23 IBMDSwitcherSaveRecall Interface

The **IBMDSwitcherSaveRecall** object interface provides functionality for storing and clearing operating states.

Public Member Functions	
Method	**Description**
Save	Stores the current operating state to the switcher.
Clear	Clears a stored operating state from the switcher.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherSaveRecall** object interface can be obtained with **IBMDSwitcher::QueryInterface**.

2.3.23.1 IBMDSwitcherSaveRecall::Save method

The **Save** method stores the current operating state to the switcher's peristent memory.

Syntax

```
HRESULT     Save(BMDSwitcherSaveRecallType type)
```

Parameters

Name	Direction	Description
type	in	The type of operating state to store.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The type parameter is invalid.
E_FAIL	Failure.

2.3.23.2 IBMDSwitcherSaveRecall::Clear method

The **Clear** method clears a stored operating state from the switcher's persistent memory.

Syntax

```
HRESULT     Clear(BMDSwitcherSaveRecallType type)
```

Parameters

Name	Direction	Description
type	in	The type of operating state to clear.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The type parameter is invalid.
E_FAIL	Failure.

Section 3 — Advanced Transitions

Transitions can be more advanced than making a simple cut between sources. This API provides a plethora of methods to enhance how a transition is performed.

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3.1 Data Types

3.1.1 Mix Parameters Event Type

BMDSwitcherTransitionMixParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionMixParameters.**

- **bmdSwitcherTransitionMixParametersEventTypeRateChanged**
  The rate changed.

3.1.2 Dip Parameters Event Type

BMDSwitcherTransitionDipParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionDipParameters.**

- **bmdSwitcherTransitionDipParametersEventTypeRateChanged**
  The rate changed.
- **bmdSwitcherTransitionDipParametersEventTypeInputDipChanged**
  The dip input changed.

3.1.3 Wipe Parameters Event Type

BMDSwitcherTransitionWipeParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionWipeParameters**.

- **bmdSwitcherTransitionWipeParametersEventTypeRateChanged**
  The rate changed.
- **bmdSwitcherTransitionWipeParametersEventTypePatternChanged**
  The pattern changed.
- **bmdSwitcherTransitionWipeParametersEventTypeBorderSizeChanged**
  The border size changed.
- **bmdSwitcherTransitionWipeParametersEventTypeInputBorderChanged**
  The border input changed.
- **bmdSwitcherTransitionWipeParametersEventTypeSymmetryChanged**
  The symmetry changed.
- **bmdSwitcherTransitionWipeParametersEventTypeSoftnessChanged**
  The softness changed.
- **bmdSwitcherTransitionWipeParametersEventTypeHorizontalOffsetChanged**
  The horizontal offset changed.
- **bmdSwitcherTransitionWipeParametersEventTypeVerticalOffsetChanged**
  The vertical offset changed.
- **bmdSwitcherTransitionWipeParametersEventTypeReverseChanged**
  The reverse flag changed.
- **bmdSwitcherTransitionWipeParametersEventTypeFlipFlopChanged**
  The flip flop flag changed.

3.1.4 DVE Parameters Event Type

BMDSwitcherTransitionDVEParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionDVEParameters**.

- **bmdSwitcherTransitionDVEParametersEventTypeRateChanged**
  The rate changed.
- **bmdSwitcherTransitionDVEParametersEventTypeLogoRateChanged**
  The logo rate changed.
- **bmdSwitcherTransitionDVEParametersEventTypeReverseChanged**
  The reverse flag changed.
- **bmdSwitcherTransitionDVEParametersEventTypeFlipFlopChanged**
  The flip flop flag changed.
- **bmdSwitcherTransitionDVEParametersEventTypeStyleChanged**
  The style changed.
- **bmdSwitcherTransitionDVEParametersEventTypeInputFillChanged**
  The fill input changed.
- **bmdSwitcherTransitionDVEParametersEventTypeInputCutChanged**
  The cut input changed.
- **bmdSwitcherTransitionDVEParametersEventTypeEnableKeyChanged**
  The enable key flag changed.
- **bmdSwitcherTransitionDVEParametersEventTypePreMultipliedChanged**
  The pre-multiplied flag changed.
- **bmdSwitcherTransitionDVEParametersEventTypeClipChanged**
  The clip changed.
- **bmdSwitcherTransitionDVEParametersEventTypeGainChanged**
  The gain changed.
- **bmdSwitcherTransitionDVEParametersEventTypeInverseChanged**
  The inverse flag changed.

3.1.5 Stinger Parameters Event Type

BMDSwitcherTransitionStingerParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionStingerParameters**.

- **bmdSwitcherTransitionStingerParametersEventTypeSourceChanged**
  The source changed.
- **bmdSwitcherTransitionStingerParametersEventTypePreMultipliedChanged**
  The pre-multiplied flag changed.
- **bmdSwitcherTransitionStingerParametersEventTypeClipChanged**
  The clip changed.
- **bmdSwitcherTransitionStingerParametersEventTypeGainChanged**
  The gain changed.
- **bmdSwitcherTransitionStingerParametersEventTypeInverseChanged**
  The inverse flag changed.
- **bmdSwitcherTransitionStingerParametersEventTypePrerollChanged**
  The preroll changed.
- **bmdSwitcherTransitionStingerParametersEventTypeClipDurationChanged**
  The clip duration changed.
- **bmdSwitcherTransitionStingerParametersEventTypeTriggerPointChanged**
  The trigger point changed.
- **bmdSwitcherTransitionStingerParametersEventTypeMixRateChanged**
  The mix rate changed.

3.1.6 Transition Parameters Event Type

BMDSwitcherTransitionParametersEventType enumerates the possible event types for **IBMDSwitcherTransitionParameters**.

- **bmdSwitcherTransitionParametersEventTypeTransitionStyleChanged**
  The transition style changed.
- **bmdSwitcherTransitionParametersEventTypeNextTransitionStyleChanged**
  The next transition style changed.
- **bmdSwitcherTransitionParametersEventTypeTransitionSelectionChanged**
  The transition selection changed.
- **bmdSwitcherTransitionParametersEventTypeNextTransitionSelectionChanged**
  The next transition selection changed.

3.1.7 Transition Style

BMDSwitcherTransitionStyle enumerates the possible transition styles, used by the **IBMDSwitcherTransitionParameters** object interface.

- **bmdSwitcherTransitionStyleMix** Mix style.
- **bmdSwitcherTransitionStyleDip** Dip style.
- **bmdSwitcherTransitionStyleWipe** Wipe style.
- **bmdSwitcherTransitionStyleDVE** DVE style.
- **bmdSwitcherTransitionStyleStinger** Stinger style.

3.1.8 Transition Selection

BMDSwitcherTransitionSelection is a bit set that enumerates what to include in a transition. This type is used by **IBMDSwitcherTransitionParameters** and **IBMDSwitcherKey** object interfaces.

- **bmdSwitcherTransitionSelectionBackground** Include background in transition.
- **bmdSwitcherTransitionSelectionKey1** Include key 1 in transition.
- **bmdSwitcherTransitionSelectionKey2** Include key 2 in transition.
- **bmdSwitcherTransitionSelectionKey3** Include key 3 in transition.
- **bmdSwitcherTransitionSelectionKey4** Include key 4 in transition.

3.1.9 DVE Transition Style

BMDSwitcherDVETransitionStyle enumerates the possible transition styles.
This type is used by the **IBMDSwitcherTransitionDVEParameters** object interface.

- **bmdSwitcherDVETransitionStyleSwooshTopLeft**
  Top left swoosh.
- **bmdSwitcherDVETransitionStyleSwooshTop**
  Top swoosh.
- **bmdSwitcherDVETransitionStyleSwooshTopRight**
  Top right swoosh.
- **bmdSwitcherDVETransitionStyleSwooshLeft**
  Left swoosh.
- **bmdSwitcherDVETransitionStyleSwooshRight**
  Right swoosh.

- **bmdSwitcherDVETransitionStyleSwooshBottomLeft**
  Bottom left swoosh.
- **bmdSwitcherDVETransitionStyleSwooshBottom**
  Bottom swoosh.
- **bmdSwitcherDVETransitionStyleSwooshBottomRight**
  Bottom right swoosh.
- **bmdSwitcherDVETransitionStyleSpinCWTopLeft**
  Top left clockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCWTopRight**
  Top right clockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCWBottomLeft**
  Bottom left clockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCWBottomRight**
  Bottom right clockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCCWTopLeft**
  Top left counterclockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCCWTopRight**
  Top right counterclockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCCWBottomLeft**
  Bottom left counterclockwise spin.
- **bmdSwitcherDVETransitionStyleSpinCCWBottomRight**
  Bottom right counterclockwise spin.
- **bmdSwitcherDVETransitionStyleSqueezeTopLeft**
  Top left squeeze.
- **bmdSwitcherDVETransitionStyleSqueezeTop**
  Top squeeze.
- **bmdSwitcherDVETransitionStyleSqueezeTopRight**
  Top right squeeze.
- **bmdSwitcherDVETransitionStyleSqueezeLeft**
  Left squeeze.
- **bmdSwitcherDVETransitionStyleSqueezeRight**
  Right squeeze.
- **bmdSwitcherDVETransitionStyleSqueezeBottomLeft**
  Bottom left squeeze.

3.1.10 Stinger Transition Source

BMDSwitcherStingerTransitionSource enumerates the possible transition sources. This type is used by the **IBMDSwitcherTransitionStingerParameters** object interface.

- **bmdSwitcherStingerTransitionSourceMediaPlayer1**
  Media player 1.
- **bmdSwitcherStingerTransitionSourceMediaPlayer2**
  Media player 2.
- **bmdSwitcherStingerTransitionSourceMediaPlayer3**
  Media player 3.
- **bmdSwitcherStingerTransitionSourceMediaPlayer4**
  Media player 4.
- **bmdSwitcherStingerTransitionSourceNone**
  None.

3.2 Interface Reference

3.2.1 IBMDSwitcherTransitionMixParameters Interface

The **IBMDSwitcherTransitionMixParameters** object interface is used for manipulating transition settings specific to mix parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixEffectBlock	IID_ IBMDSwitcherMixEffectBlock	An **IBMDSwitcherTransitionMixParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetRate	Get the current rate.
SetRate	Set the rate.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

3.2.1.1 IBMDSwitcherTransitionMixParameters::GetRate method

The **GetRate** method returns the current rate in frames.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
`frames`	out	The current rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.1.2 IBMDSwitcherTransitionMixParameters::SetRate method

The **SetRate** method sets the rate in frames.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
`frames`	in	The desired rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The frames parameter is invalid.

3.2.1.3 IBMDSwitcherTransitionMixParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionMixParameters** object. Pass an object implementing the **IBMDSwitcherTransitionMixParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionMixParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionMixParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.1.4 IBMDSwitcherTransitionMixParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherTransitionMixParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionMixParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.2 IBMDSwitcherTransitionMixParametersCallback Interface

The **IBMDSwitcherTransitionMixParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionMixParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition MixParameters	IID_IBMDSwitcherTransition MixParameters	An **IBMDSwitcherTransitionMixParametersCallback** object interface is installed with **IBMDSwitcherTransitionMixParameters::AddCallback** and removed with **IBMDSwitcherTransitionMixParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.2.1 IBMDSwitcherTransitionMixParametersCallback::Notify method

The **Notify** method is called when IBMDSwitcherTransitionMixParameters events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify(BMDSwitcherTransitionMixParametersEventType eventType);
```

Parameters

Name	Direction	Description
`eventType`	in	**BMDSwitcherTransitionMixParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.3 IBMDSwitcherTransitionDipParameters Interface

The **IBMDSwitcherTransitionDipParameters** object interface is used for manipulating transition settings specific to dip parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher MixEffectBlock	IID_IBMDSwitcher MixEffectBlock	An **IBMDSwitcherTransitionDipParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetRate	Get the current rate.
SetRate	Set the rate.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

3.2.3.1 IBMDSwitcherTransitionDipParameters::GetRate method

The **GetRate** method returns the current rate in frames.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
`frames`	out	The current rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.3.2 IBMDSwitcherTransitionDipParameters::SetRate method

The **SetRate** method sets the rate in frames.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
`frames`	in	The desired rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The frames parameter is invalid.

3.2.3.3 IBMDSwitcherTransitionDipParameters::GetInputDip method

The **GetInputDip** method returns the current dip input.

Syntax

```
HRESULT     GetInputDip (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
`input`	out	The current dip input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

3.2.3.4 IBMDSwitcherTransitionDipParameters::SetInputDip method

The **SetInputDip** method sets the dip input.

Syntax

```
HRESULT     SetInputDip (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
input	in	The desired dip input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

3.2.3.5 IBMDSwitcherTransitionDipParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionDipParameters** object. Pass an object implementing the **IBMDSwitcherTransitionDipParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionDipParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionDipParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.3.6 IBMDSwitcherTransitionDipParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherTransitionDipParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionDipParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.4 IBMDSwitcherTransitionDipParametersCallback Interface

The **IBMDSwitcherTransitionDipParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionDipParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition DipParameters	IID_ IBMDSwitcherTransition DipParameters	An **IBMDSwitcherTransitionDipParametersCallback** object interface is installed with **IBMDSwitcherTransitionDipParameters::AddCallback** and removed with **IBMDSwitcherTransitionDipParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.4.1 IBMDSwitcherTransitionDipParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTransitionDipParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherTransitionDipParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherTransitionDipParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.5 IBMDSwitcherTransitionWipeParametersCallback Interface

The **IBMDSwitcherTransitionWipeParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionWipeParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition WipeParameters	IID_IBMDSwitcherTransition WipeParameters	**IBMDSwitcherTransitionWipeParametersCallback** object interface is installed with **IBMDSwitcherTransitionWipeParameters::AddCallback** and removed with **IBMDSwitcherTransitionWipeParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.5.1 IBMDSwitcherTransitionWipeParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTransitionWipeParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify (BMDSwitcherTransitionWipeParametersEventType eventType);
```

Parameters

Name	Direction	Description
`eventType`	in	**BMDSwitcherTransitionWipeParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6 IBMDSwitcherTransitionWipeParameters Interface

The **IBMDSwitcherTransitionWipeParameters** object interface is used for manipulating transition settings specific to wipe parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMix EffectBlock	IID_IBMDSwitcherMix EffectBlock	An **IBMDSwitcherTransitionWipeParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetRate	Get the current rate.
SetRate	Set the rate.
GetPattern	Get the current pattern.
SetPattern	Set the pattern.
GetBorderSize	Get the current border size.
SetBorderSize	Set the border size.
GetInputBorder	Get the current border input.
SetInputBorder	Set the border input.
GetSymmetry	Get the current symmetry.
SetSymmetry	Set the symmetry.
GetSoftness	Get the current softness.
SetSoftness	Set the softness.
GetHorizontalOffset	Get the current horizontal offset.
SetHorizontalOffset	Set the horizontal offset.
GetVerticalOffset	Get the current vertical offset.
SetVerticalOffset	Set the vertical offset.
GetReverse	Get the current reverse flag.
SetReverse	Set the reverse flag.
GetFlipFlop	Get the current flip flop flag.
SetFlipFlop	Set the flip flop flag.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

3.2.6.1 IBMDSwitcherTransitionWipeParameters::GetRate method

The **GetRate** method returns the current rate in frames.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
`frames`	out	The current rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.6.2 IBMDSwitcherTransitionWipeParameters::SetRate method

The **SetRate** method sets the rate in frames.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
`frames`	in	The desired rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The frames parameter is invalid.

3.2.6.3 IBMDSwitcherTransitionWipeParameters::GetPattern method

The **GetPattern** method returns the current pattern style.

Syntax

```
HRESULT     GetPattern (BMDSwitcherPatternStyle* pattern);
```

Parameters

Name	Direction	Description
`pattern`	out	The current pattern.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The pattern parameter is invalid.

3.2.6.4 IBMDSwitcherTransitionWipeParameters::SetPattern method

The **SetPattern** method sets the rate in frames.

Syntax

```
HRESULT     SetPattern (BMDSwitcherPatternStyle pattern);
```

Parameters

Name	Direction	Description
frames	in	The desired pattern.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The pattern parameter is invalid.

3.2.6.5 IBMDSwitcherTransitionWipeParameters::GetBorderSize method

The **GetBorderSize** method returns the current border size.

Syntax

```
HRESULT     GetBorderSize (double* size);
```

Parameters

Name	Direction	Description
size	out	The current border size.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The size parameter is invalid.

3.2.6.6 IBMDSwitcherTransitionWipeParameters::SetBorderSize method

The **SetBorderSize** method sets the border size.

Syntax

```
HRESULT     SetBorderSize (double size);
```

Parameters

Name	Direction	Description
size	in	The desired border size.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.7 IBMDSwitcherTransitionWipeParameters::GetInputBorder method

The **GetInputBorder** method returns the current border input.

Syntax

```
HRESULT     GetInputBorder (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
input	out	The current border input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

3.2.6.8 IBMDSwitcherTransitionWipeParameters::SetInputBorder method

The **SetInputBorder** method sets the border input.

Syntax

```
HRESULT     SetInputBorder (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
input	in	92.323

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

3.2.6.9 IBMDSwitcherTransitionWipeParameters::GetSymmetry method

The **GetSymmetry** method returns the current symmetry.

Syntax

```
HRESULT     GetSymmetry (double* symmetry);
```

Parameters

Name	Direction	Description
symmetry	out	The current symmetry.

Return Values

Value	Description
S_OK	Success.

3.2.6.10 IBMDSwitcherTransitionWipeParameters::SetSymmetry method

The **SetSymmetry** method sets the symmetry.

Syntax

```
HRESULT     SetSymmetry (double symmetry);
```

Parameters

Name	Direction	Description
symmetry	in	The desired symmetry.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.11 IBMDSwitcherTransitionWipeParameters::GetSoftness method

The **GetSoftness** method returns the current softness.

Syntax

```
HRESULT     GetSoftness (double* soft);
```

Parameters

Name	Direction	Description
soft	out	The current softness.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The soft parameter is invalid.

3.2.6.12 IBMDSwitcherTransitionWipeParameters::SetSoftness method

The **SetSoftness** method sets the softness.

Syntax

```
HRESULT     SetSoftness (double soft);
```

Parameters

Name	Direction	Description
soft	in	The desired softness.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.13 IBMDSwitcherTransitionWipeParameters::GetHorizontalOffset method

The **GetHorizontalOffset** method returns the current horizontal offset.

Syntax

```
HRESULT     GetHorizontalOffset (double* hOffset);
```

Parameters

Name	Direction	Description
hOffset	out	The current horizontal offset.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hOffset parameter is invalid.

3.2.6.14 IBMDSwitcherTransitionWipeParameters::SetHorizontalOffset method

The **SetHorizontalOffset** method sets the horizontal offset.

Syntax

```
HRESULT     SetHorizontalOffset (double hOffset);
```

Parameters

Name	Direction	Description
hOffset	in	The desired horizontal offset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.15 IBMDSwitcherTransitionWipeParameters::GetVerticalOffset method

The **GetVerticalOffset** method returns the current vertical offset.

Syntax

```
HRESULT     GetVerticalOffset (double* vOffset);
```

Parameters

Name	Direction	Description
vOffset	out	The current vertical offset.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The vOffset parameter is invalid.

3.2.6.16 IBMDSwitcherTransitionWipeParameters::SetVerticalOffset method

The **SetVerticalOffset** method sets the vertical offset.

Syntax

```
HRESULT     SetVerticalOffset (double vOffset);
```

Parameters

Name	Direction	Description
vOffset	in	The desired vertical offset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.17 IBMDSwitcherTransitionWipeParameters::GetReverse method

The **GetReverse** method returns the current reverse flag.

Syntax

```
HRESULT     GetReverse (boolean* reverse);
```

Parameters

Name	Direction	Description
reverse	out	The current reverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The reverse parameter is invalid.

3.2.6.18 IBMDSwitcherTransitionWipeParameters::SetReverse method

The **SetReverse** method sets the reverse flag.

Syntax

```
HRESULT     SetReverse (boolean reverse);
```

Parameters

Name	Direction	Description
reverse	in	The desired reverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.19 IBMDSwitcherTransitionWipeParameters::GetFlipFlop method

The **GetFlipFlop** method returns the current flip flop flag.

Syntax

```
HRESULT     GetFlipFlop (boolean* flipflop);
```

Parameters

Name	Direction	Description
flipflop	out	The current flip flop flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The flipflop parameter is invalid.

3.2.6.20 IBMDSwitcherTransitionWipeParameters::SetFlipFlop method

The **SetFlipFlop** method sets the flip flop flag.

Syntax

```
HRESULT     SetFlipFlop (boolean flipflop);
```

Parameters

Name	Direction	Description
flipflop	in	The desired flip flop flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.6.21 IBMDSwitcherTransitionWipeParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionWipeParameters** object. Pass an object implementing the **IBMDSwitcherTransitionWipeParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionWipeParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionWipeParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.6.22 IBMDSwitcherTransitionWipeParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherTransitionWipeParametersCallback* allback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionWipeParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.7 IBMDSwitcherTransitionDVEParameters Interface

The **IBMDSwitcherTransitionDVEParameters** object interface is used for manipulating transition settings specific to DVE parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixEffectBlock	IID_IBMDSwitcherMix EffectBlock	An **IBMDSwitcherTransitionDVEParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetRate	Get the current rate.
SetRate	Set the rate.
GetLogoRate	Get the current logo rate.
SetLogoRate	Set the logo rate.
GetReverse	Get the current reverse flag.
SetReverse	Set the reverse flag.
GetFlipFlop	Get the current flip flop flag.
SetFlipFlop	Set the flip flop flag.
GetStyle	Get the current style.
SetStyle	Set the style.
DoesSupportStyle	Gets whether the connected device supports a given DVE transition style.
GetNumSupportedStyles	Gets the number of supported DVE transition style types.
GetSupportedStyle	Gets one or more supported DVE transition styles.
GetInputFill	Get the current fill input.
SetInputFill	Set the fill input.
GetInputCut	Get the current cut input.
SetInputCut	Set the cut input.
GetFillInputAvailabilityMask	Get the availability mask for the fill of this input.
GetCutInputAvailabilityMask	Get the availability mask for the cut of this input.
GetEnableKey	Get the current enable key.
SetEnableKey	Set the enable key.
GetPreMultiplied	Get the current pre-multiplied flag.
SetPreMultiplied	Set the pre-multiplied flag.
GetClip	Get the current clip value.
SetClip	Set the clip value.
GetGain	Get the current gain.
SetGain	Set the gain.
GetInverse	Get the current inverse flag.
SetInverse	Set the inverse flag.
AddCallback	Add a callback.

3.2.7.1 IBMDSwitcherTransitionDVEParameters::GetRate method

The **GetRate** method returns the current rate in frames.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
`frames`	out	The current rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.7.2 IBMDSwitcherTransitionDVEParameters::SetRate method

The **SetRate** method sets the rate in frames.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
`frames`	in	The desired rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The frames parameter is invalid.

3.2.7.3 IBMDSwitcherTransitionDVEParameters::GetLogoRate method

The **GetLogoRate** method returns the current logo rate in frames.

Syntax

```
HRESULT     GetLogoRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
`frames`	out	The current logo rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.7.4 IBMDSwitcherTransitionDVEParameters::SetLogoRate method

The **SetLogoRate** method sets the logo rate in frames.

Syntax

```
HRESULT     SetLogoRate (uint32_t frames);
```

Parameters

Name	Direction	Description
`frames`	in	The desired logo rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The frames parameter is invalid.

3.2.7.5 IBMDSwitcherTransitionDVEParameters::GetReverse method

The **GetReverse** method returns the current reverse flag.

Syntax

```
HRESULT     GetReverse (boolean* reverse);
```

Parameters

Name	Direction	Description
`reverse`	out	The current reverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The reverse parameter is invalid.

3.2.7.6 IBMDSwitcherTransitionDVEParameters::SetReverse method

The **SetReverse** method sets the reverse flag.

Syntax

```
HRESULT     SetReverse (boolean reverse);
```

Parameters

Name	Direction	Description
reverse	in	The desired reverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.7 IBMDSwitcherTransitionDVEParameters::GetFlipFlop method

The **GetFlipFlop** method returns the current flip flop flag.

Syntax

```
HRESULT     GetFlipFlop (boolean* flipflop);
```

Parameters

Name	Direction	Description
flipflop	out	The current flip flop flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The flipflop parameter is invalid.

3.2.7.8 IBMDSwitcherTransitionDVEParameters::SetFlipFlop method

The **SetFlipFlop** method sets the flip flop flag.

Syntax

```
HRESULT     SetFlipFlop (boolean flipflop);
```

Parameters

Name	Direction	Description
flipflop	in	The desired flip flop flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.9 IBMDSwitcherTransitionDVEParameters::GetStyle method

The **GetStyle** method returns the current style.

Syntax

```
HRESULT     GetStyle (BMDSwitcherDVETransitionStyle* style);
```

Parameters

Name	Direction	Description
`style`	out	The current style.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The style parameter is invalid.

3.2.7.10 IBMDSwitcherTransitionDVEParameters::SetStyle method

The **SetStyle** method sets the style.

Syntax

```
HRESULT     SetStyle (BMDSwitcherDVETransitionStyle style);
```

Parameters

Name	Direction	Description
`style`	in	The desired style.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The style parameter is invalid.

3.2.7.11 IBMDSwitcherTransitionDVEParameters::DoesSupportStyle method

The **DoesSupportStyle** method determines if the connected device supports a given DVE transition style.

Syntax

```
HRESULT     DoesSupportStyle (BMDSwitcherDVETransitionStyle style, BMDbool* supported);
```

Parameters

Name	Direction	Description
`style`	in	The DVE style to check.
`supported`	out	Boolean status of the requested DVE transition style support.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supported parameter is invalid.

3.2.7.12 IBMDSwitcherTransitionDVEParameters::GetNumSupportedStyles method

The **GetNumSupportedStyles** method determines the total number of supported DVE transition styles in the connected device.

Syntax

```
HRESULT     GetNumSupportedStyles (uint32_t* numSupportedStyles);
```

Parameters

Name	Direction	Description
`numSupportedStyles`	out	Total number of DVE transition styles supported.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The numSupportedStyles parameter is invalid.

3.2.7.13 IBMDSwitcherTransitionDVEParameters::GetSupportedStyles method

The **GetSupportedStyles** method retrieves a list of supported DVE transition styles supported by the connected device.

> **NOTE** That it is the user application's responsibility to ensure the supportedStyles destination array is at least as big as **supportedStylesMaxCount**.

Syntax

```
HRESULT    GetNumSupportedStyles (BMDSwitcherDVETransitionStyle* supportedStyles,
           uint32_t supportedStylesMaxCount);
```

Parameters

Name	Direction	Description
`supportedStyles`	out	List of supported DVE transition styles.
`supportedStylesMaxCount`	in	Maximum number of supported DVE transition styles to retrieve.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportedStyles parameter is invalid.

3.2.7.14 IBMDSwitcherTransitionDVEParameters::GetInputFill method

The **GetInputFill** method returns the current fill input.

Syntax

```
HRESULT    GetInputFill (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
`input`	out	The current fill input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

3.2.7.15 IBMDSwitcherTransitionDVEParameters::SetInputFill method

The **SetInputFill** method sets the fill input.

Syntax

```
HRESULT     SetInputFill (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
`input`	in	The desired fill input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

3.2.7.16 IBMDSwitcherTransitionDVEParameters::GetInputCut method

The **GetInputCut** method returns the current cut input.

Syntax

```
HRESULT     GetInputCut (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
`input`	out	The current cut input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

3.2.7.17 IBMDSwitcherTransitionDVEParameters::SetInputCut method

The **SetInputCut** method sets the cut input.

Syntax

```
HRESULT     SetInputCut (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
`input`	in	The desired cut input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

3.2.7.18 IBMDSwitcherTransitionDVEParameters::GetFillInputAvailabilityMask method

The **GetFillInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for fill inputs available to this DVE transition. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a fill input for this DVE transition.

Syntax

```
HRESULT     GetFillInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
`mask`	out	BMDSwitcherInputAvailability bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

3.2.7.19 IBMDSwitcherTransitionDVEParameters::GetCutInputAvailabilityMask method

The **GetCutInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for cut inputs available to this DVE transition. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a cut input for this DVE transition.

Syntax

```
HRESULT     GetCutInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	BMDSwitcherInputAvailability bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

3.2.7.20 IBMDSwitcherTransitionDVEParameters::GetEnableKey method

The **GetEnableKey** method returns the current enableKey flag.

Syntax

```
HRESULT     GetEnableKey (boolean* enableKey);
```

Parameters

Name	Direction	Description
enableKey	out	The current enableKey flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enableKey parameter is invalid.

3.2.7.21 IBMDSwitcherTransitionDVEParameters::SetEnableKey method

The **SetEnableKey** method sets the enableKey flag.

Syntax

```
HRESULT     SetEnableKey (boolean enableKey);
```

Parameters

Name	Direction	Description
enableKey	in	The desired enableKey flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Failure.

3.2.7.22 IBMDSwitcherTransitionDVEParameters::GetPreMultiplied method

The **GetPreMultiplied** method returns the current pre-multiplied flag.

Syntax

```
HRESULT     GetPreMultiplied (boolean* preMultiplied);
```

Parameters

Name	Direction	Description
enableKey	in	The desired enableKey flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The preMultiplied parameter is invalid.

3.2.7.23 IBMDSwitcherTransitionDVEParameters::GetPreMultiplied method

The **GetPreMultiplied** method sets the pre-multiplied flag.

Syntax

```
HRESULT     SetPreMultiplied (boolean preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	in	The desired pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.24 IBMDSwitcherTransitionDVEParameters::GetClip method

The **GetClip** method returns the current clip value.

Syntax

```
HRESULT     GetClip (double* clip);
```

Parameters

Name	Direction	Description
clip	out	The current clip value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clip parameter is invalid.

3.2.7.25 IBMDSwitcherTransitionDVEParameters::SetClip method

The **SetClip** method sets the clip value.

Syntax

```
HRESULT     SetClip (double clip);
```

Parameters

Name	Direction	Description
clip	in	The desired clip value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.26 IBMDSwitcherTransitionDVEParameters::GetGain method

The **GetGain** method returns the current clip.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

3.2.7.27 IBMDSwitcherTransitionDVEParameters::SetGain method

The **SetGain** method sets the gain.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.28 IBMDSwitcherTransitionDVEParameters::GetInverse method

The **GetInverse** method returns the current inverse flag.

Syntax

```
HRESULT     GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

3.2.7.29 IBMDSwitcherTransitionDVEParameters::SetInverse method

The **SetInverse** method sets the inverse flag.

Syntax

```
HRESULT     SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.7.30 IBMDSwitcherTransitionDVEParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionDVEParameters** object. Pass an object implementing the **IBMDSwitcherTransitionDVEParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionDVEParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionDVEParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.7.31 IBMDSwitcherTransitionDVEParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionDVEParametersCallback* callback);
```

Parameters

Name	Direction	Description
`callback`	in	Callback object implementing the **IBMDSwitcherTransitionDVEParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.8 IBMDSwitcherTransitionDVEParametersCallback Interface

The **IBMDSwitcherTransitionDVEParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionDVEParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition DVEParametersCallback	IID_IBMDSwitcherTransition DVEParameters	An **IBMDSwitcherTransitionDVEParametersCallback** object interface is installed with **IBMDSwitcherTransitionDVEParameters::AddCallback** and removed with **IBMDSwitcherTransitionDVEParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.8.1 IBMDSwitcherTransitionDVEParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTransitionDVEParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherTransitionDVEParametersEventType eventType);
```

Parameters

Name	Direction	Description
`eventType`	in	**BMDSwitcherTransitionDVEParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9 IBMDSwitcherTransitionStingerParameters Interface

The **IBMDSwitcherTransitionStingerParameters** object interface is used for manipulating transition settings specific to stinger parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMixEffectBlock	IID_IBMDSwitcherMixEffectBlock	An **IBMDSwitcherTransitionStingerParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetSource	Get the current source.
SetSource	Set the source.
GetPreMultiplied	Get the current pre-multiplied flag.
SetPreMultiplied	Set the pre-multiplied flag.
GetClip	Get the current clip value.
SetClip	Set the clip value.
GetGain	Get the current gain.
SetGain	Set the gain.
GetInverse	Get the current inverse flag.
SetInverse	Set the inverse flag.
GetPreroll	Get the current pre-roll.
SetPreroll	Set the pre-roll.
GetClipDuration	Get the current clip duration.
SetClipDuration	Set the clip duration.
GetTriggerPoint	Get the current trigger point.
SetTriggerPoint	Set the trigger point.
GetMixRate	Get the current mix rate.
SetMixRate	Set the mix rate.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

3.2.9.1 IBMDSwitcherTransitionStingerParameters::GetSource method

The **GetSource** method returns the current source.

Syntax

```
HRESULT     GetSource (BMDSwitcherStingerTransitionSource* src);
```

Parameters

Name	Direction	Description
src	out	The current source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The src parameter is invalid.

3.2.9.2 IBMDSwitcherTransitionStingerParameters::SetSource method

The **SetSource** method sets the rate in frames.

Syntax

```
HRESULT     SetSource (BMDSwitcherStingerTransitionSource src);
```

Parameters

Name	Direction	Description
src	in	The desired source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The src parameter is invalid.

3.2.9.3 IBMDSwitcherTransitionStingerParameters::GetPreMultiplied method

The **GetPreMultiplied** method returns the current pre-multiplied flag.

Syntax

```
HRESULT     GetPreMultiplied (boolean* preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	out	The current pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The preMultiplied parameter is invalid.

3.2.9.4 IBMDSwitcherTransitionStingerParameters::SetPreMultiplied method

The **SetPreMultiplied** method sets the pre-multiplied flag.

Syntax

```
HRESULT     SetPreMultiplied (boolean preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	in	The desired pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.5 IBMDSwitcherTransitionStingerParameters::GetClip method

The **GetClip** method returns the current clip value.

Syntax

```
HRESULT     GetClip (double* clip);
```

Parameters

Name	Direction	Description
clip	out	The current clip value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clip parameter is invalid.

3.2.9.6 IBMDSwitcherTransitionStingerParameters::SetClip method

The **SetClip** method sets the clip value.

Syntax

```
HRESULT     SetClip (double clip);
```

Parameters

Name	Direction	Description
clip	in	The desired clip value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.7 IBMDSwitcherTransitionStingerParameters::GetGain method

The **GetGain** method returns the current clip.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

3.2.9.8 IBMDSwitcherTransitionStingerParameters::SetGain method

The **SetGain** method sets the gain.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.9 IBMDSwitcherTransitionStingerParameters::GetInverse method

The **GetInverse** method returns the current inverse flag.

Syntax

```
HRESULT     GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

3.2.9.10 IBMDSwitcherTransitionStingerParameters::SetInverse method

The **SetInverse** method sets the inverse flag.

Syntax

```
HRESULT     SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.11 IBMDSwitcherTransitionStingerParameters::GetPreroll method

The **GetPreroll** method returns the current pre-roll.

Syntax

```
HRESULT     GetPreroll (uint32_t* frames);
```

Parameters

Name	Direction	Description
frames	out	The current pre-roll in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.9.12 IBMDSwitcherTransitionStingerParameters::SetPreroll method

The **SetPreroll** method sets the pre-roll.

Syntax

```
HRESULT     SetPreroll (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	The desired pre-roll in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.13 IBMDSwitcherTransitionStingerParameters::GetClipDuration method

The **GetClipDuration** method returns the current clip duration.

Syntax

```
HRESULT     GetClipDuration (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	out	The current clip duration in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.9.14 IBMDSwitcherTransitionStingerParameters::SetClipDuration method

The **SetClipDuration** method sets the clip duration.

Syntax

```
HRESULT     SetClipDuration (uint32_t* frames);
```

Parameters

Name	Direction	Description
frames	in	The desired clip duration in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.15 IBMDSwitcherTransitionStingerParameters::GetTriggerPoint method

The **GetTriggerPoint** method returns the current trigger point.

Syntax

```
HRESULT     GetTriggerPoint (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	out	The current trigger point in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.9.16 IBMDSwitcherTransitionStingerParameters::SetTriggerPoint method

The **SetTriggerPoint** method sets the trigger point.

Syntax

```
HRESULT     SetTriggerPoint (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	The desired trigger point in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.17 IBMDSwitcherTransitionStingerParameters::GetMixRate method

The **GetMixRate** method returns the current mix rate.

Syntax

```
HRESULT     GetMixRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
frames	out	The current mix rate in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

3.2.9.18 IBMDSwitcherTransitionStingerParameters::SetMixRate method

The **SetMixRate** method sets the mix rate.

Syntax

```
HRESULT     SetMixRate (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	The desired mix rate in frames.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.9.19 IBMDSwitcherTransitionStingerParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionStingerParameters** object. Pass an object implementing the **IBMDSwitcherTransitionStingerParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTransitionStingerParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherTransitionStingerParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.9.20 IBMDSwitcherTransitionStingerParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherTransitionStingerParametersCallback*
            callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherTransitionStingerParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.10 IBMDSwitcherTransitionStingerParametersCallback Interface

The **IBMDSwitcherTransitionStingerParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionStingerParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition StingerParameters	IID_ IBMDSwitcherTransition StingerParameters	An **IBMDSwitcherTransitionStingerParametersCallback** object interface is installed with **IBMDSwitcherTransitionStingerParameters::AddCallback** and removed with **IBMDSwitcherTransitionStingerParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.10.1 IBMDSwitcherTransitionStingerParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTransitionStingerParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify(BMDSwitcherTransitionStingerParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherTransitionStingerParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

3.2.11 IBMDSwitcherTransitionParameters Interface

The **IBMDSwitcherTransitionParameters** object interface is used for manipulating transition settings specific to Stinger parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition Parameters	IID_IBMDSwitcherTransition Parameters	An **IBMDSwitcherTransitionParameters** object interface can be obtained with **IBMDSwitcherMixEffectBlock::QueryInterface.**

Public Member Functions	
Method	**Description**
GetTransitionStyle	Get the current transition style.
GetNextTransitionStyle	Get the next transition style.
SetNextTransitionStyle	Set the next transition style.
GetTransitionSelection	Get the current transition selection.
SetNextTransitionSelection	Set the next transition selection.
GetNextTransitionSelection	Get the next transition selection.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

3.2.11.1 IBMDSwitcherTransitionParameters::GetTransitionStyle method

The **GetTransitionStyle** method returns the current transition style.

Syntax

```
HRESULT     GetTransitionStyle (BMDSwitcherTransitionStyle* style);
```

Parameters

Name	Direction	Description
style	out	The current transition style.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The style parameter is invalid.

3.2.11.2 IBMDSwitcherTransitionParameters::GetNextTransitionStyle method

The **GetNextTransitionStyle** method returns the next transition style.

Syntax

```
HRESULT     GetNextTransitionStyle (BMDSwitcherTransitionStyle* style);
```

Parameters

Name	Direction	Description
style	out	The next transition style.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The style parameter is invalid.

3.2.11.3 IBMDSwitcherTransitionParameters::SetNextTransitionStyle method

The **SetNextTransitionStyle** method sets the rate in frames.

Syntax

```
HRESULT     SetNextTransitionStyle (BMDSwitcherTransitionStyle style);
```

Parameters

Name	Direction	Description
style	in	The desired style.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The style parameter is invalid.

3.2.11.4 IBMDSwitcherTransitionParameters::GetTransitionSelection method

The **GetTransitionSelection** method returns the current transition selection.

Syntax

```
HRESULT     GetTransitionSelection (BMDSwitcherTransitionSelection* selection);
```

Parameters

Name	Direction	Description
selection	out	The current transition selection.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The selection parameter is invalid.

3.2.11.5 IBMDSwitcherTransitionParameters::SetNextTransitionSelection method

The **SetNextTransitionSelection** method sets the next transition selection.

Syntax

```
HRESULT     SetNextTransitionSelection (BMDSwitcherTransitionSelection selection);
```

Parameters

Name	Direction	Description
selection	in	The desired next transition selection.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The selection parameter is invalid.

3.2.11.6 IBMDSwitcherTransitionParameters::GetNextTransitionSelection method

The **GetNextTransitionSelection** method returns the next transition selection.

Syntax

```
HRESULT     GetNextTransitionSelection (BMDSwitcherTransitionSelection* selection);
```

Parameters

Name	Direction	Description
selection	out	The next transition selection.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The selection parameter is invalid.

3.2.11.7 IBMDSwitcherTransitionParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherTransitionParameters** object. Pass an object implementing the **IBMDSwitcherTransitionParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherTransitionParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherTransitionParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.11.8 IBMDSwitcherTransitionParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherTransitionParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherTransitionParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

3.2.12 IBMDSwitcherTransitionParametersCallback Interface

The **IBMDSwitcherTransitionParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherTransitionParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTransition Parameters	IID_ IBMDSwitcherTransition Parameters	An **IBMDSwitcherTransitionParametersCallback** object interface is installed with **IBMDSwitcherTransitionParameters::AddCallback**andremoved with **IBMDSwitcherTransitionParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

3.2.12.1 IBMDSwitcherTransitionParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTransitionParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify(BMDSwitcherTransitionParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherTransitionParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 4 — Switcher Media

All media used by the switcher comes from its media pool, which consists of still images or video clips. Developers can upload and download from the media pool of a switcher using this SDK.

4.1 General Information

4.1.1 Uploading a Still or Clip

Here are the basic steps of uploading media to a switcher:

1. Ensure you are connected to a switcher and have a switcher object. Please refer to the Basic Switcher Control section for how to do this.
2. Get the **IBMDSwitcherMediaPool** interface from the switcher object, and use **IBMDSwitcherMediaPool::GetStills** to get the interface dedicated to all stills or **IBMDSwitcherMediaPool::GetClip** to get the interface dedicated to a particular clip.
3. **IBMDSwitcherStills::Lock** and **IBMDSwitcherClip::Lock** requests a lock of the switcher's stills/clip and the **IBMDSwitcherLockCallback** interface should then be used to be informed of when a lock is obtained. Many media pool operations require you to have a lock first.
4. If you are transferring to a clip then you probably want to stop users playing/downloading any frame in the clip by calling **IBMDSwitcherClip::SetInvalid**.
5. Use **IBMDSwitcherMediaPool::CreateFrame** to generate a frame object that will eventually be passed to the upload system. Populate this with your image data by filling in the frame's buffer, which is available via **IBMDSwitcherFrame::GetBytes**. Note that you do not need a lock to create a frame, but it is important that the chosen dimensions for the frame match those of the switcher's video mode when you proceed with the upload step.
6. Call **IBMDSwitcherStill::Upload** or **IBMDSwitcherClip::UploadFrame** to begin the transfer of the frame to the switcher. You will be notified of the outcome of this process by the **IBMDSwitherStillsCallback** or **IBMDSwitcherClipCallback** interfaces. Regardless of outcome, this notification will also include the frame that was sent.
7. If you are transferring to a clip then you may want to repeatedly perform steps 4 and 5, although only one frame is permitted to be transferred at a time, and upon completing clip transfers you need to use **IBMDSwitcherClip::SetValid**.
8. Unlock the stills or clip. If you are uploading multiple stills then you may want to repeatedly lock and unlock the stills pool to allow other users to obtain a lock.

4.1.2 Downloading a Still or Clip

The steps are very similar to uploading:

1. Ensure you are connected to a switcher and have a switcher object. Please refer to the Basic Switcher Control section for how to do this.
2. Get the **IBMDSwitcherMediaPool** interface from the switcher object, and use **IBMDSwitcherMediaPool::GetStills** to get the interface dedicated to all stills or **IBMDSwitcherMediaPool::GetClip** to get the interface dedicated to a particular clip.
3. **IBMDSwitcherStills::Lock** and **IBMDSwitcherClip::Lock** requests a lock of the switcher's stills/clip and the **IBMDSwitcherLockCallback** interface should then be used to be informed of when a lock is obtained. Many media pool operations require you to have a lock first.
4. Call **IBMDSwitcherStill::Download** or **IBMDSwitcherClip::DownloadFrame** to begin the transfer of a frame from the switcher. You will be notified of the outcome of this process by the **IBMDSwitherStillsCallback** or **IBMDSwitcherClipCallback** interfaces. For successful downloads, this notification will also include the frame that was requested.
5. Unlock the stills or clip. If you are downloading multiple stills then you may want to repeatedly lock and unlock the stills pool to allow other users to obtain a lock.

4.2 Media Data Types

4.2.1 Switcher Pixel Format

BMDSwitcherPixelFormat enumerates the possible pixel formats for **IBMDSwitcherFrame**.

- **bmdSwitcherPixelFormat8BitARGB**
  Four bytes per pixel, alpha, red, green, blue.
- **bmdSwitcherPixelFormat8BitXRGB**
  Four bytes per pixel, padding, red, green, blue.
- **bmdSwitcherPixelFormat8BitYUV**
  Four bytes per two pixels, cb, y0, cr, y1.
- **bmdSwitcherPixelFormat10BitYUVA**
  Eight bytes per two pixels, a0, cb, y0, a1, cr, y1.

4.2.2 Media Player Source Type

BMDSwitcherMediaPlayerSourceType enumerates the possible source types for **IBMDSwitcherMediaPlayer**.

- **bmdSwitcherMediaPlayerSourceTypeStill**
  Still.
- **bmdSwitcherMediaPlayerSourceTypeClip**
  Clip.

4.2.3 Media Pool Event Type

BMDSwitcherMediaPoolEventType enumerates the possible event types for **IBMDSwitcherStillsCallback** and **IBMDSwitcherClipCallback**.

- **bmdSwitcherMediaPoolEventTypeValidChanged**
  The validity has changed.
- **bmdSwitcherMediaPoolEventTypeNameChanged**
  The name has changed.
- **bmdSwitcherMediaPoolEventTypeHashChanged**
  The hash has changed.
- **bmdSwitcherMediaPoolEventTypeAudioValidChanged**
  The audio validity has changed.
- **bmdSwitcherMediaPoolEventTypeLockBusy**
  All clients receive this when any client obtains a lock.
- **bmdSwitcherMediaPoolEventTypeLockIdle**
  All clients receive this when no client has lock.
- **bmdSwitcherMediaPoolEventTypeTransferCompleted**
  The transfer has completed.
- **bmdSwitcherMediaPoolEventTypeTransferCancelled**
  The transfer has cancelled.
- **bmdSwitcherMediaPoolEventTypeTransferFailed**
  The transfer has failed.
- **bmdSwitcherMediaPoolEventTypeAudioNameChanged**
  The audio name has changed.
- **bmdSwitcherMediaPoolEventTypeAudioHashChanged**
  The audio hash has changed.

4.2.4 BMDSwitcherStillCaptureEventType

BMDSwitcherStillCaptureEventType enumerates the possible event types for **IBMDSwitcherStillCaptureCallback**.

- **bmdSwitcherStillCaptureEventTypeIsAvailableChanged**
  The availability of still capture has changed.

4.3 Interface Reference

4.3.1 IBMDSwitcherMediaPlayerCallback Interface

The **IBMDSwitcherMediaPlayerCallback** object interface is a callback class containing methods that are called when the source, state or properties change for an **IBMDSwitcherMediaPlayer** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPlayer	IID_ IBMDSwitcherMediaPlayer	An **IBMDSwitcherMediaPlayerCallback** object interface is installed with **IBMDSwitcherMediaPlayer::AddCallback** and removed with **IBMDSwitcherMediaPlayer::RemoveCallback**

Public Member Functions	
Method	**Description**
SourceChanged	Called when the source changes.
PlayingChanged	Called when playing changes.
LoopChanged	Called when loop changes.
AtBeginningChanged	Called when the current clip frame index changes to or from zero.
ClipFrameChanged	Called when the clip frame index is set.

4.3.1.1 IBMDSwitcherMediaPlayerCallback::SourceChanged method

The **SourceChanged** method is called when the media player source changes.

Syntax

```
HRESULT     SourceChanged (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.1.2 IBMDSwitcherMediaPlayerCallback::PlayingChanged method

The **PlayingChanged** method is called when the media player playing state changes.

Syntax

```
HRESULT     PlayingChanged (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.1.3 IBMDSwitcherMediaPlayerCallback::LoopChanged method

The **LoopChanged** method is called when the media player loop property changes.

Syntax

```
HRESULT     LoopChanged (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.1.4 IBMDSwitcherMediaPlayerCallback::AtBeginningChanged method

The **AtBeginningChanged** method is called when the media player current clip frame index changes to or from zero.

Syntax

```
HRESULT     AtBeginningChanged (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.1.5 IBMDSwitcherMediaPlayerCallback::ClipFrameChanged method

The **ClipFrameChanged** method is called when the media player clip frame index is set.

Syntax

```
HRESULT     ClipFrameChanged (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.2 IBMDSwitcherMediaPlayerIterator Interface

The **IBMDSwitcherMedi**aPlayerIterator is used to enumerate the available media players.

A reference to an IBMDSw**itcherMediaPlayerIterator** object interface may be obtained from an **IBMDSwitcher** object interface using the CreateIterator method. Pass **IID_IBMDSwitcherMediaPlayerIterator** for the iid parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher:: CreateIterator** can return an **IBMDSwitcherMediaPlayerIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherMediaPlayer** object interface.

4.3.2.1 IBMDSwitcherMediaPlayerIterator::Next method

The Next method returns the next available **IBMDSwitcherMediaPlayer** object interface.

Syntax

```
HRESULT     Next (IBMDSwitcherMediaPlayer* mediaPlayer);
```

Parameters

Name	Direction	Description
mediaPlayer	out	**IBMDSwitcherMediaPlayer** object interface or NULL when no more media players are available.

Return Values

Value	Description
S_FALSE	No more **IBMDSwitcherMediaPlayer** objects available.
S_OK	Success.
E_POINTER	The mediaPlayer parameter is invalid.

4.3.3 IBMDSwitcherMediaPlayer Interface

The **IBMDSwitcherMediaPlayer** object interface provides the ability to play stills and clips sourced from the media pool.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPlayerIterator	IID_IBMDSwitcherMediaPlayerIterator	**IBMDSwitcherMediaPlayerIterator::Next** returns an **IBMDSwitcherMediaPlayer** object interface for each available media player.

Public Member Functions	
Method	**Description**
GetSource	Gets the media player source.
SetSource	Sets the media player source.
GetPlaying	Gets the media player playing state.
SetPlaying	Sets the media player playing state.
GetLoop	Gets the media player loop property.
SetLoop	Sets the media player loop property.
GetAtBeginning	Gets the media player at beginning state.
SetAtBeginning	Sets the media player at beginning state.
GetClipFrame	Gets the media player clip frame index.
SetClipFrame	Sets the media player clip frame index.
AddCallback	Adds a media player callback.
RemoveCallback	Removes a media player callback.

4.3.3.1 IBMDSwitcherMediaPlayer::GetSource method

The **GetSource** method gets the source type and index for the media player.

Syntax

```
HRESULT    GetSource (BMDSwitcherMediaPlayerSourceType* type, uint32_t* index);
```

Parameters

Name	Direction	Description
type	out	**BMDSwitcherMediaPlayerSourceType** specifying the source as a still or clip.
index	out	Integer specifying the index of the source.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The type or index parameter is invalid.

4.3.3.2 IBMDSwitcherMediaPlayer::SetSource method

The **SetSource** method sets the source type and index for the media player.

Syntax

```
HRESULT     SetSource (BMDSwitcherMediaPlayerSourceType type, uint32_t index);
```

Parameters

Name	Direction	Description
type	in	**BMDSwitcherMediaPlayerSourceType** specifying the source as a still or clip.
index	in	Integer specifying the index of the source.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	The type or index parameter is invalid.

4.3.3.3 IBMDSwitcherMediaPlayer::GetPlaying method

The **GetPlaying** method gets the playing state for the media player.

Syntax

```
HRESULT     GetPlaying (boolean* playing);
```

Parameters

Name	Direction	Description
playing	out	Boolean value specifying the playing state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The playing parameter is invalid.

4.3.3.4 IBMDSwitcherMediaPlayer::SetPlaying method

The **SetPlaying** method sets the playing state for the media player.

Syntax

```
HRESULT     SetPlaying (boolean playing);
```

Parameters

Name	Direction	Description
playing	in	Boolean value specifying the playing state.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.3.5 IBMDSwitcherMediaPlayer::GetLoop method

The **GetLoop** method gets the loop property for the media player.

Syntax

```
HRESULT     GetLoop (boolean* loop);
```

Parameters

Name	Direction	Description
loop	out	Boolean value specifying the loop property.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The loop parameter is invalid.

4.3.3.6 IBMDSwitcherMediaPlayer::SetLoop method

The **SetLoop** method sets the loop property for the media player.

Syntax

```
HRESULT     SetLoop (boolean loop);
```

Parameters

Name	Direction	Description
loop	in	Boolean value specifying the loop property.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.3.7 IBMDSwitcherMediaPlayer::GetAtBeginning method

The **GetAtBeginning** method gets the at beginning property for the media player.

Syntax

```
HRESULT     GetAtBeginning (boolean* atBeginning);
```

Parameters

Name	Direction	Description
atBeginning	out	Boolean value that is true when the current frame index is zero and false otherwise.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The atBeginning parameter is invalid.

4.3.3.8 IBMDSwitcherMediaPlayer::SetAtBeginning method

The **SetAtBeginning** method sets the current frame index to zero for the media player.

Syntax

```
HRESULT     SetAtBeginning ();
```

Parameters

none.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.3.9 IBMDSwitcherMediaPlayer::GetClipFrame method

The **GetClipFrame** method gets the clip frame index for the media player when it is not playing.

Syntax

```
HRESULT     GetClipFrame (uint32_t* clipFrameIndex);
```

Parameters

Name	Direction	Description
clipFrameIndex	out	Integer value specifying the clip frame index.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clipFrameIndex parameter is invalid.

4.3.3.10 IBMDSwitcherMediaPlayer::SetClipFrame method

The **SetClipFrame** method sets the clip frame index for the media player if it is not playing.

Syntax

```
HRESULT     SetClipFrame (uint32_t clipFrameIndex);
```

Parameters

Name	Direction	Description
clipFrameIndex	in	Integer value specifying the clip frame index.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.3.11 IBMDSwitcherMediaPlayer::AddCallback method

The **AddCallback** method configures a callback to be called when the properties change for an **IBMDSwitcherMediaPlayer** object. Pass an object implementing the **IBMDSwitcherMediaPlayerCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherMediaPlayerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMediaPlayerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.3.12 IBMDSwitcherMediaPlayer::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherMediaPlayerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMediaPlayerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.4 IBMDSwitcherFrame Interface

The **IBMDSwitcherFrame** object interface represents a frame and provides access to the frame's buffer and frame properties.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPool	IID_IBMDSwitcherMediaPool	**IBMDSwitcherMediaPool::CreateFrame** returns an **IBMDSwitcherFrame** object.

Public Member Functions	
Method	**Description**
GetWidth	Gets the frame width in pixels.
GetHeight	Gets the frame height in pixels.
GetRowBytes	Gets the frame row size in bytes.
GetPixelFormat	Gets the pixel format.
GetBytes	Gets a pointer to the frame's buffer.

4.3.4.1 IBMDSwitcherFrame::GetWidth method

The **GetWidth** method returns the width of the frame in pixels.

Syntax

```
int32_t    GetWidth (void);
```

Parameters

none.

Return Values

Value	Description
Width	Frame width in pixels.

4.3.4.2 IBMDSwitcherFrame::GetHeight method

The **GetHeight** method returns the height of the frame in pixels.

Syntax

```
int32_t   GetHeight (void);
```

Parameters

none.

Return Values

Value	Description
Height	Frame height in pixels.

4.3.4.3 IBMDSwitcherFrame::GetRowBytes method

The **GetRowBytes** method returns the number of bytes per row in the frame.

Syntax

```
int32_t   GetRowBytes (void);
```

Parameters

none.

Return Values

Value	Description
ByteCount	Frame row size in bytes.

4.3.4.4 IBMDSwitcherFrame::GetPixelFormat method

The **GetPixelFormat** method returns the pixel format of the frame.

Syntax

```
BMDSwitcherPixelFormat  GetPixelFormat (void);
```

Parameters

none.

Return Values

Value	Description
PixelFormat	Frame pixel format.

4.3.4.5 IBMDSwitcherFrame::GetBytes method

The **GetBytes** method allows direct access to the data buffer of the frame.
The audio format is raw 24 bit, 2 channel, 48 khz.

Syntax

```
HRESULT    GetBytes (void* buffer);
```

Parameters

Name	Direction	Description
buffer	out	Pointer to the frame's raw buffer – only valid while while object remains valid.

Return Values

Value	Description
E_POINTER	The buffer parameter is invalid.
S_OK	Success.

4.3.5 IBMDSwitcherAudio Interface

The **IBMDSwitcherAudio** object interface represents audio and provides access to the audio's buffer and audio size.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPool	IID_IBMDSwitcherMediaPool	**IBMDSwitcherMediaPool::CreateAudio** returns an **IBMDSwitcherAudio** object.

Public Member Functions	
Method	**Description**
GetSize	Gets the audio size in bytes.
GetBytes	Gets the audio buffer pointer.

4.3.5.1 IBMDSwitcherFrame::GetSize method

The **GetSize** method returns the size of the audio in bytes.

Syntax

```
int32_t    GetSize (void);
```

Parameters

none.

Return Values

Value	Description
ByteCount	Audio size in bytes.

4.3.5.2 IBMDSwitcherAudio::GetBytes method

The **GetBytes** method allows direct access to the data buffer of the audio.

Syntax

```
HRESULT     GetBytes (void* buffer);
```

Parameters

Name	Direction	Description
buffer	out	Pointer to the audio's raw buffer – only valid while object remains valid.

Return Values

Value	Description
E_POINTER	The buffer parameter is invalid.
S_OK	Success.

4.3.6 IBMDSwitcherLockCallback Interface

The **IBMDSwitcherLockCallback** object interface is a callback class with an **Obtained** method that is called when the client receives a lock. Like all callback methods, **Obtained** may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherStills	IID_IBMDSwitcherStills	An **IBMDSwitcherLockCallback** object interface is installed with **IBMDSwitcherStills::Lock** and removed with **IBMDSwitcherStills::Unlock**
IBMDSwitcherClip	IID_IBMDSwitcherClip	An **IBMDSwitcherLockCallback** object interface is installed with **IBMDSwitcherClip::Lock** and removed with **IBMDSwitcherClip::Unlock**

Public Member Functions	
Method	**Description**
Obtained	Called when the client receives a lock.

4.3.6.1 IBMDSwitcherLockCallback::Obtained method

The **Obtained** method is called only for the client that receives the lock.

Syntax

```
HRESULT     Obtained (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.7 IBMDSwitcherStillsCallback Interface

The **IBMDSwitcherStillsCallback** object interface is a callback class with a **Notify** method that is called when an event occurs for an **IBMDSwitcherStills** object. Like all callback methods, **Notify** may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherStills	IID_IBMDSwitcherStills	An **IBMDSwitcherStillsCallback** object interface is installed with **IBMDSwitcherStills::AddCallback** and removed with **IBMDSwitcherStills::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an stills event occurs.

4.3.7.1 IBMDSwitcherStillsCallback::Notify method

The **Notify** method is called when a stills event occurs. See **BMDSwitcherMediaPoolEventType** for a list of event types that may occur.

- **bmdSwitcherMediaPoolEventTypeTransferCompleted**
  IBMDSwitcherStills::Upload and **IBMDSwitcherStills::Download**.
- **bmdSwitcherMediaPoolEventTypeTransferCancelled**
  IBMDSwitcherStills::Upload only.
- **bmdSwitcherMediaPoolEventTypeTransferFailed**
  BMDSwitcherStills::Upload only.

IBMDSwitcherFrame ::AddRef must be called on the frame to extend its lifetime beyond the scope of this method.

Syntax

```
HRESULT    Notify (BMDSwitcherMediaPoolEventType eventType, IBMDSwitcherFrame*
                   frame, int32_t index);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMediaPoolEventType** that describes the type of event that has occurred.
frame	in	The **IBMDSwitcherFrame** that is being transferred. May be **NULL**.
index	in	Specifies the still for the eventType. The index is -1 when eventType is not specific to an individual still.

Return Values

Value	Description
S_OK	Success.

4.3.8 IBMDSwitcherStills Interface

The **IBMDSwitcherStills** object interface represents the media pool stills.

The switcher stills interface provides methods to transfer stills and change still properties.
No more than one transfer can occur at a time.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPool	IID_IBMDSwitcherMediaPool	**IBMDSwitcherMediaPool::GetStills** returns an **IBMDSwitcherStills** object.

Public Member Functions	
Method	**Description**
GetCount	Gets the number of stills.
IsValid	Gets the validity of a still.
GetName	Gets the name of a still.
GetHash	Gets the hash of a still.
SetInvalid	Invalidates a still.
Lock	Locks all stills.
Unlock	Unlocks all stills.
Upload	Uploads a still.
Download	Downloads a still.
CancelTransfer	Cancels the upload or download.
GetProgress	Gets the transfer progress.
AddCallback	Adds a stills callback.
RemoveCallback	Removes a stills callback.

4.3.8.1 IBMDSwitcherStills::GetCount method

The **GetCount** method returns the number of stills.

Syntax

```
HRESULT     GetCount (uint32_t* count);
```

Parameters

Name	Direction	Description
count	out	Number of stills.

Return Values

Value	Description
E_POINTER	The count parameter is NULL.
S_OK	Success.

4.3.8.2 IBMDSwitcherStills::IsValid method

The **IsValid** method returns the validity of a still. A valid still can be downloaded and used by the media player.

Syntax

```
HRESULT     IsValid (uint32_t index, bool* valid);
```

Parameters

Name	Direction	Description
index	in	Still index.
valid	out	Validity of the still.

Return Values

Value	Description
E_POINTER	The valid parameter is NULL.
S_OK	Success.

4.3.8.3 IBMDSwitcherStills::GetName method

The **GetName** method returns the name of a still.

Syntax

```
HRESULT     GetName (uint32_t index, string* name);
```

Parameters

Name	Direction	Description
index	in	Still index.
name	out	Still name.

Return Values

Value	Description
E_POINTER	The name parameter is NULL.
S_OK	Success.

4.3.8.4 IBMDSwitcherStills::SetName method

The **SetName** method sets the name of a still.

Syntax

```
HRESULT     SetName (uint32_t index, string name);
```

Parameters

Name	Direction	Description
index	in	Still index.
name	in	The still name.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The name parameter is invalid.
E_INVALIDARG	The index parameter is invalid.

4.3.8.5 IBMDSwitcherStills::GetHash method

The **GetHash** method returns the hash of a still.

Syntax

```
HRESULT     GetHash (uint32_t index, BMDSwitcherHash* hash);
```

Parameters

Name	Direction	Description
index	in	Still index.
hash	out	Still hash.

Return Values

Value	Description
E_POINTER	The hash parameter is NULL.
S_OK	Success.

4.3.8.6 IBMDSwitcherStills::SetInvalid method

The **SetInvalid** method invalidates a still for all switcher users. A still is set valid after a successful upload. This method will only be successful if you have a lock or no other connected client has a lock.

Syntax

```
HRESULT     SetInvalid (uint32_t index);
```

Parameters

Name	Direction	Description
index	in	Still index.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.8.7 IBMDSwitcherStills::Lock method

The **Lock** method obtains a client lock for stills. Pass an object implementing the **IBMDSwitcherLockCallback** interface to receive **IBMDSwitcherLockCallback::Obtained** when the client obtains the stills lock.

Syntax

```
HRESULT     Lock (IBMDSwitcherLockCallback* lockCallback);
```

Parameters

Name	Direction	Description
lockCallback	in	Callback object implementing the **IBMDSwitcherLockCallback** object interface.

Return Values

Value	Description
E_POINTER	The lockCallback parameter is invalid.
E_FAIL	Failure.
S_OK	Success.

4.3.8.8 IBMDSwitcherStills::Unlock method

The **Unlock** method releases the previous client lock for stills.

Syntax

```
HRESULT    Unlock (IBMDSwitcherLockCallback* lockCallback);
```

Parameters

Name	Direction	Description
lockCallback	in	Callback object implementing the **IBMDSwitcherLockCallback** object interface.

Return Values

Value	Description
E_POINTER	The lockCallback parameter is invalid.
E_FAIL	Failure.
S_OK	Success.

4.3.8.9 IBMDSwitcherStills::Upload method

The **Upload** method transfers a still to the media pool. The client must hold the stills lock for the duration of the transfer. No more than one transfer can occur at a time. Do not write to the frame's buffer during the transfer.

Syntax

```
HRESULT    Upload (uint32_t index, string* name, IBMDSwitcherFrame* frame);
```

Parameters

Name	Direction	Description
index	in	Destination still index.
name	in	Destination still name.
frame	in	Still frame to upload. The frame dimensions must match the switcher video mode.

Return Values

Value	Description
E_POINTER	The lockCallback parameter is invalid.
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	The index parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the stills lock.

4.3.8.10 IBMDSwitcherStills::Download method

The **Download** method transfers a still from the media pool. The client must hold the stills lock for the duration of the transfer. No more than one transfer can occur at a time.

Syntax

```
HRESULT     Download (uint32_t index);
```

Parameters

Name	Direction	Description
index	in	Index of still to download.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	The index parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the stills lock.

4.3.8.11 IBMDSwitcherStills::CancelTransfer method

The **CancelTransfer** method cancels the pending transfer. If there is no pending transfer then this method has no effect.

Syntax

```
HRESULT     CancelTransfer ();
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.8.12 IBMDSwitcherStills::GetProgress method

The **GetProgress** method gets the progress of the pending transfer. If there is no pending transfer then progress is zero.

Syntax

```
HRESULT     GetProgress (double* progress);
```

Parameters

Name	Direction	Description
progress	out	Transfer progress. Range is between 0.0 and 1.0.

Return Values

Value	Description
E_POINTER	The progress parameter is invalid.
S_OK	Success.

4.3.8.13 IBMDSwitcherStills::AddCallback method

The **AddCallback** method configures a callback to be called when an event occurs for an **IBM**DSwitcherStills object. Pass an object implementing the IBMDSwitcherStillsCallback interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

BMDSwitcherStillsCallback ::Notify will be called immediately on the provided IBMDSwitch**erStillsCallback** callback object with one of the following **BMDSwitcherMediaPoolEventType** eventTypes:

- **bmdSwitcherMediaPoolEventTypeLockBusy**
- **bmdSwitcherMediaPoolEventTypeLockIdle**

Syntax

```
HRESULT     AddCallback (IBMDSwitcherStillsCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStillsCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.8.14 IBMDSwitcherStills::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherStillsCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStillsCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.9 IBMDSwitcherStillCaptureCallback Interface

The **IBMDSwitcherStillCaptureCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherStillCapture** object.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherStillCapture	IID_IBMDSwitcherStillCapture	**An IBMDSwitcherStillCaptureCallback** object interface is installed with **IBMDSwitcherStillCapture::AddCallback** and removed with **IBMDSwitcherStillCapture::RemoveCallback.**

Public Member Functions	
Method	**Description**
`Notify`	Called when an event occurs.

4.3.9.1 IBMDSwitcherStillCaptureCallback::Notify method

The Notify method is called when **IBMDSwitcherStillCapture** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherStillCaptureEventType eventType)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherStillCaptureEventType** that describes the type of event that has occurred.

4.3.10 IBMDSwitcherStillCapture Interface

The **IBMDSwitcherStillCapture** object interface provides functionality for capturing the program output to media pool stills.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherStills	IID_IBMDSwitcherStills	**An IBMDSwitcherStillCapture** object interface can be obtained with **IBMDSwitcherStills::QueryInterface**.

Public Member Functions	
Method	**Description**
`IsAvailable`	Determines whether the switcher is currently able to capture the program output to a media pool still.
`CaptureStill`	Captures the current program output frame as a media pool still.
`AddCallback`	Add a callback.
`RemoveCallback`	Remove a callback.

4.3.10.1 IBMDSwitcherStillCapture::IsAvailable method

The IsAvailable method is used to determine whether the switcher is currently able to capture the program output frame. Capture requires the media pool to have at least one empty still.

Syntax

```
HRESULT     IsAvailable(Boolean* available)
```

Parameters

Name	Direction	Description
available	out	Boolean that indicates whether still capture is currently available.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The available parameter is not a valid pointer.
E_FAIL	Failure.

4.3.10.2 IBMDSwitcherStillCapture::CaptureStill method

The **CaptureStill** method captures the current program output frame and stores it in the first empty still in the media pool.

Syntax

```
HRESULT     CaptureStill()
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen when there are no empty stills in the media pool.

4.3.10.3 IBMDSwitcherStillCapture::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherStillCapture** object. Pass an object implementing the **IBMDSwitcherStillCaptureCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherStillCaptureCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStillCaptureCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.10.4 IBMDSwitcherStillCapture::RemoveCallback method

The RemoveCallback method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherStillCaptureCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStillCaptureCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.11 IBMDSwitcherClipCallback Interface

The **IBMDSwitcherClipCallback** object interface is a callback class with a **Notify** method that is called when an event occurs for an **IBMDSwitcherClip** object. Like all callback methods, **Notify** may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherClip	IID_IBMDSwitcherClip	An **IBMDSwitcherClipCallback** object interface is installed with **IBMDSwitcherClip::AddCallback** and removed with **IBMDSwitcherClip::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

4.3.11.1 IBMDSwitcherClipCallback::Notify method

The **Notify** method is called when a clip event occurs. See **BMDSwitcherMediaPoolEventType** for a list of event types that may occur.

The frame is set during the following transfer events, otherwise it is NULL:

- **bmdSwitcherMediaPoolEventTypeTransferCompleted**
  IBMDSwitcherClip::Upload and **IBMDSwitcherClip::Download**.
- **bmdSwitcherMediaPoolEventTypeTransferCancelled**
  IBMDSwitcherClip::Upload only.
- **bmdSwitcherMediaPoolEventTypeTransferFailed**
  IBMDSwitcherClip::Upload only.

The audio is set during the following transfer events, otherwise it is NULL:

- **bmdSwitcherMediaPoolEventTypeTransferCompleted**
  IBMDSwitcherClip::UploadAudio and **IBMDSwitcherClip::DownloadAudio.**
- **bmdSwitcherMediaPoolEventTypeTransferCancelled**
  IBMDSwitcherClip::UploadAudio only.
- **bmdSwitcherMediaPoolEventTypeTransferFailedIBMDSwitcherClip::UploadAudio** only.

IBMDSwitcherFrame::AddRef must be called on the frame to extend its lifetime beyond the scope of this method.

IBMDSwitcherAudio::AddRef must be called on the audio to extend its lifetime beyond the scope of this method.

Syntax

```
HRESULT    Notify (BMDSwitcherMediaPoolEventType eventType,
                   IBMDSwitcherFrame* frame, int32_t frameIndex,
                   IBMDSwitcherAudio* audio, int32_t clipIndex);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMediaPoolEventType** that describes the type of event that has occurred.
frame	in	The **IBMDSwitcherFrame** that is being transferred. May be NULL.
frameIndex	in	Specifies the frame for the eventType. The index is -1 when eventType is not specific to an individual clip frame.
audio	in	The **IBMDSwitcherAudio** that is being transferred. May be NULL.
clipIndex	in	Specifies the clip for the eventType.

Return Values

Value	Description
S_OK	Success.

4.3.12 IBMDSwitcherClip Interface

The **IBMDSwitcherClip** object interface represents the media pool clips.

The switcher clip interface provides methods to transfer clip frames and audio and to change clip properties. No more than one transfer can occur at a time.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPool	IID_IBMDSwitcherClip	**IBMDSwitcherMediaPool::GetClip** returns an **IBMDSwitcherClip object.**

Public Member Functions	
Method	**Description**
GetIndex	Gets the clip index.
IsValid	Gets the validity of the clip.
GetName	Gets the name of the clip.
SetValid	Sets the clip name and frame count and sets the clip valid.
SetInvalid	Invalidates the clip.
GetFrameCount	Gets the current clip frame count.
GetMaxFrameCount	Gets the maximum clip frame count.
IsFrameValid	Gets the validity of a clip frame.
GetFrameHash	Gets the hash of a clip frame.
IsAudioValid	Gets the validity of the clip audio.
GetAudioName	Gets the name of the clip audio.
GetAudioHash	Gets the hash of the clip audio.
SetAudioInvalid	Invalidates the clip audio.
Lock	Locks the clip.
Unlock	Unlocks the clip.
UploadFrame	Uploads a clip frame.
DownloadFrame	Downloads a clip frame.
UploadAudio	Uploads the clip audio.
DownloadAudio	Downloads the clip audio.
CancelTransfer	Cancels the transfer.
GetProgress	Gets the transfer progress.
AddCallback	Adds a clip callback.
RemoveCallback	Removes a clip callback.

4.3.12.1 IBMDSwitcherClip::GetIndex method

The **GetIndex** method returns the clip index.

Syntax

```
HRESULT     GetIndex (uint32_t* index);
```

Parameters

Name	Direction	Description
index	out	The clip index.

Return Values

Value	Description
S_OK	Success.

4.3.12.2 IBMDSwitcherClip::IsValid method

The **IsValid** method returns the validity of the clip. A valid clip can be downloaded and played by the media player.

Syntax

```
HRESULT     IsValid (bool* valid);
```

Parameters

Name	Direction	Description
valid	out	Validity of the clip.

Return Values

Value	Description
E_POINTER	The valid parameter is NULL.
S_OK	Success.

4.3.12.3 IBMDSwitcherClip::GetName method

The **GetName** method returns the name of the clip.

Syntax

```
HRESULT     GetName (string* name);
```

Parameters

Name	Direction	Description
name	out	Clip name.

Return Values

Value	Description
E_POINTER	The name parameter is NULL.
S_OK	Success.

4.3.12.4 IBMDSwitcherClip::SetName method

The **SetName** method sets the name of the clip.

Syntax

```
HRESULT     SetName (string name);
```

Parameters

Name	Direction	Description
name	in	The clip name.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The name parameter is invalid.

4.3.12.5 IBMDSwitcherClip::SetValid method

The **SetValid** method sets the clip name and frame count and sets the clip valid. **SetValid** has no effect unless all frames up to frameCount are valid. A valid clip can be downloaded and played by the media player.

Syntax

```
HRESULT     SetValid (string name, uint32_t frameCount);
```

Parameters

Name	Direction	Description
name	in	Clip name.
frameCount	in	Clip frame count.

Return Values

Value	Description
E_POINTER	The valid parameter is NULL.
S_OK	Success.

4.3.12.6 IBMDSwitcherClip::SetInvalid method

The **SetInvalid** method invalidates every frame of a clip for all users, and should be done before uploading a new clip. A clip should then be set to valid once uploading is complete. This method will only be successful if you have a lock or no other connected client has a lock.

Syntax

```
HRESULT     SetInvalid ();
```

Parameters

none.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.12.7 IBMDSwitcherClip::GetFrameCount method

The **GetFrameCount** method gets the current frame count of the clip.

Syntax

```
HRESULT     GetFrameCount (uint32_t* frameCount);
```

Parameters

Name	Direction	Description
name	out	Clip frame count.

Return Values

Value	Description
E_POINTER	The frameCount parameter is NULL.
S_OK	Success.

4.3.12.8 IBMDSwitcherClip::GetMaxFrameCount method

The **GetMaxFrameCount** method gets the maximum frame count for the clip. The maximum frame count can be set using **IBMDSwitcherMediaPool::SetClipMaxFrameCounts**.

Syntax

```
HRESULT     GetMaxFrameCount (uint32_t* maxFrameCount);
```

Parameters

Name	Direction	Description
maxFrameCount	out	Maximum clip frame count.

Return Values

Value	Description
E_POINTER	The maxFrameCount parameter is NULL.
S_OK	Success.

4.3.12.9 IBMDSwitcherClip::IsFrameValid method

The **IsFrameValid** method returns the validity of a clip frame.

Syntax

```
HRESULT     IsFrameValid (uint32_t frameIndex, bool* valid);
```

Parameters

Name	Direction	Description
frameIndex	in	Clip frame index.
valid	out	Validity of the clip frame.

Return Values

Value	Description
E_POINTER	The valid parameter is NULL.
E_INVALIDARG	The frameIndex parameter is invalid.
S_OK	Success.

4.3.12.10 IBMDSwitcherClip::GetFrameHash method

The **GetFrameHash** method returns the hash of a clip frame.

Syntax

```
HRESULT     GetFrameHash (uint32_t frameIndex, BMDSwitcherHash* hash);
```

Parameters

Name	Direction	Description
frameIndex	in	Clip frame index.
hash	out	Clip frame hash.

Return Values

Value	Description
E_POINTER	The hash parameter is NULL.
E_INVALIDARG	The frameIndex parameter is invalid.
S_OK	Success.

4.3.12.11 IBMDSwitcherClip::IsAudioValid method

The **IsAudioValid** method returns the validity of the clip audio. Valid clip audio can be downloaded and played by the media player.

Syntax

```
HRESULT     IsAudioValid (bool* valid);
```

Parameters

Name	Direction	Description
valid	out	Validity of the clip audio.

Return Values

Value	Description
E_POINTER	The valid parameter is NULL.
S_OK	Success.

4.3.12.12 IBMDSwitcherClip::GetAudioName method

The **GetAudioName** method returns the name of the clip audio.

Syntax

```
HRESULT     GetAudioName (string* name);
```

Parameters

Name	Direction	Description
name	out	Clip audio name.

Return Values

Value	Description
E_POINTER	The name parameter is NULL.
S_OK	Success.

4.3.12.13 IBMDSwitcherClip::SetAudioName method

The **SetAudioName** method sets the name of the clip audio.

Syntax

```
HRESULT     SetAudioName (string name);
```

Parameters

Name	Direction	Description
name	in	The still name.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The name parameter is invalid.

4.3.12.14 IBMDSwitcherClip::GetAudioHash method

The **GetAudioHash** method returns the hash of the clip audio.

Syntax

```
HRESULT     GetAudioHash (BMDSwitcherHash* hash);
```

Parameters

Name	Direction	Description
hash	out	Clip audio frame hash.

Return Values

Value	Description
E_POINTER	The hash parameter is NULL.
S_OK	Success.

4.3.12.15 IBMDSwitcherClip::SetAudioInvalid method

The **SetAudioInvalid** method invalidates the clip audio. Clip audio is set valid after a successful clip audio upload.

Syntax

```
HRESULT     SetAudioInvalid ();
```

Parameters

none.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

4.3.12.16 IBMDSwitcherClip::Lock method

The **Lock** method obtains a client lock for the clip. Pass an object implementing the **IBMDSwitcherLockCallback** interface to receive **IBMDSwitcherLockCallback::Obtained** when the client obtains the clip lock.

Syntax

```
HRESULT     Lock (IBMDSwitcherLockCallback* lockCallback);
```

Parameters

Name	Direction	Description
lockCallback	in	Callback object implementing the **IBMDSwitcherLockCallback** object interface.

Return Values

Value	Description
E_POINTER	The lockCallback parameter is invalid.
E_FAIL	Failure.
S_OK	Success.

4.3.12.17 IBMDSwitcherClip::Unlock method

The **Unlock** method releases the previous client lock for the clip.

Syntax

```
HRESULT     Unlock (IBMDSwitcherLockCallback* lockCallback);
```

Parameters

Name	Direction	Description
lockCallback	in	Callback object implementing the **IBMDSwitcherLockCallback** object interface.

Return Values

Value	Description
E_POINTER	The lockCallback parameter is invalid.
E_FAIL	Failure.
S_OK	Success.

4.3.12.18 IBMDSwitcherClip::UploadFrame method

The **UploadFrame** method transfers a clip frame to a clip in the media pool. The client must hold the clip lock for the duration of the transfer. No more than one transfer can occur at a time. Do not write to the frame's buffer during the transfer.

Syntax

```
HRESULT     UploadFrame (uint32_t frameIndex, IBMDSwitcherFrame* frame);
```

Parameters

Name	Direction	Description
frameIndex	in	frameIndex
frame	in	Clip frame to upload. The frame dimensions must match the switcher video mode.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The frame parameter is invalid.
E_INVALIDARG	The frameIndex parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the clip lock.

4.3.12.19 IBMDSwitcherClip::DownloadFrame method

The **DownloadFrame** method transfers a clip frame from the media pool. The client must hold the clip lock for the duration of the transfer. No more than one transfer can occur at a time.

Syntax

```
HRESULT     DownloadFrame (uint32_t frameIndex);
```

Parameters

Name	Direction	Description
frameIndex	in	Index of clip frame to download.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	The frameIndex parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the clip lock.

4.3.12.20 IBMDSwitcherClip::UploadAudio method

The **UploadAudio** method transfers audio to a clip in the media pool. The client must hold the clip lock for the duration of the transfer. No more than one transfer can occur at a time. Do not write to the audio's buffer during the transfer.

Syntax

```
HRESULT     UploadAudio (IBMDSwitcherAudio* audio);
```

Parameters

Name	Direction	Description
audio	in	Clip audio to upload.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The audio parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the clip lock.

4.3.12.21 IBMDSwitcherClip::DownloadAudio method

The **Download** method transfers a clip from the media pool. The client must hold the clip lock for the duration of the transfer. No more than one transfer can occur at a time.

Syntax

```
HRESULT     DownloadAudio ();
```

Parameters

none.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_OUTOFMEMORY	Unable to allocate required memory.
E_ACCESSDENIED	The client is not holding the clip lock.

4.3.12.22 IBMDSwitcherClip::CancelTransfer method

The **CancelTransfer** method cancels the pending transfer. If there is no pending transfer then this method has no effect.

Syntax

```
HRESULT     CancelTransfer ();
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.12.23 IBMDSwitcherClip::GetProgress method

The **GetProgress** method gets the progress of the pending transfer. If there is no pending transfer then progress is zero.

Syntax

```
HRESULT     GetProgress (double* progress);
```

Parameters

Name	Direction	Description
progress	out	Transfer progress. Range is between 0.0 and 1.0.

Return Values

Value	Description
E_POINTER	The progress parameter is invalid.
S_OK	Success.

4.3.12.24 IBMDSwitcherClip::AddCallback method

The **AddCallback** method configures a callback to be called when an event occurs for an **IBMDSwitcherClip** object. Pass an object implementing the **IBMDSwitcherClipCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

IBMDSwitcherClipCallback ::Notify will be called immediately on the provided IBMDSwitcherClipCallback callback object with one of the following **BMDSwitcherMediaPoolEventType** eventTypes:

- **bmdSwitcherMediaPoolEventTypeLockBusy**
- **bmdSwitcherMediaPoolEventTypeLockIdle**

Syntax

```
HRESULT     AddCallback (IBMDSwitcherClipCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherClipCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.12.25 IBMDSwitcherClip::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherClipCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherClipCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.13 IBMDSwitcherMediaPoolCallback Interface

The **IBMDSwitcherMediaPoolCallback** object interface is a callback class containing methods that are called when a property changes on an **IBMDSwitcherMediaPool** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMediaPool	IID_IBMDSwitcherMediaPool	An **IBMDSwitcherMediaPoolCallback** object interface is installed with **IBMDSwitcherMediaPool::AddCallback** and removed with **IBMDSwitcherMediaPool::RemoveCallback**

Public Member Functions	
Method	**Description**
ClipFrameMaxCountsChanged	Called when the maximum frame count changes for one or more clips.
FrameTotalForClipsChanged	Called when the total number of frames available to clips changes.

4.3.13.1 IBMDSwitcherMediaPoolCallback::ClipFrameMaxCountsChanged method

The **ClipFrameMaxCountsChanged** method is called when the maximum frame count changes for one or more clips. Call **IBMDSwitcherMediaPool::GetClipMaxFrameCounts** to get the maximum frame counts for clips.

Syntax

```
HRESULT     ClipFrameMaxCountsChanged ();
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.13.2 IBMDSwitcherMediaPoolCallback::FrameTotalForClipsChanged method

The **FrameTotalForClipsChanged** method is called when the total number of frames available to clips changes. Call **IBMDSwitcherMediaPool::GetFrameTotalForClips** to get the the total number of frames available to clips.

Syntax

```
HRESULT     FrameTotalForClipsChanged ();
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.

4.3.14 IBMDSwitcherMediaPool Interface

The **IBMDSwitcherMediaPool** object interface provides for the creation of frames and audio and for accessing and modifying stills and clips.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherMediaPool** object interface can be obtained with **IBMDSwitcher::QueryInterface.**

Public Member Functions	
Method	**Description**
GetStills	Gets the **IBMDSwitcherStills** object interface.
GetClip	Gets a **IBMDSwitcherClip** object interface.
GetClipCount	Gets the number of clips.
CreateFrame	Creates an **IBMDSwitcherFrame** object.
CreateAudio	Creates an **IBMDSwitcherAudio** object.
GetFrameTotalForClips	Gets the total number of frames available to clips.
GetClipMaxFrameCounts	Gets the maximum frame count for all clips.
SetClipMaxFrameCounts	Sets the maximum frame count for all clips.
Clear	clears all stills, clips and clip audio
DoesVideoModeChangeClearMediaPool	Determines if changing video standard will clear the media pool.
AddCallback	Adds a media pool callback.
RemoveCallback	Removes a media pool callback.

4.3.14.1 IBMDSwitcherMediaPool::GetStills method

The **GetStills** method gets the **IBMDSwitcherStills** object interface.

Syntax

```
HRESULT    GetStills (IBMDSwitcherStills* stills);
```

Parameters

Name	Direction	Description
stills	out	The stills object interface.

Return Values

Value	Description
E_POINTER	The stills parameter is invalid.
S_OK	Success.

4.3.14.2 IBMDSwitcherMediaPool::GetClip method

The **GetClip** method gets the **IBMDSwitcherClip** object interface.

Syntax

```
HRESULT     GetClip (uint32_t clipIndex, IBMDSwitcherClip* clip);
```

Parameters

Name	Direction	Description
clipIndex	in	The clip index.
clip	out	The clip object interface.

Return Values

Value	Description
E_POINTER	The stills parameter is invalid.
E_INVALIDARG	The **clipIndex** parameter is invalid.
S_OK	Success.

4.3.14.3 IBMDSwitcherMediaPool::GetClipCount method

The **GetClipCount** method gets the number of clips.

Syntax

```
HRESULT     GetClipCount (uint32_t* clipCount);
```

Parameters

Name	Direction	Description
clipCount	out	The number of clips.

Return Values

Value	Description
E_POINTER	The **clipCount** parameter is invalid.
S_OK	Success.

4.3.14.4 IBMDSwitcherMediaPool::CreateFrame method

The **CreateFrame** method creates an **IBMDSwitcherFrame** object.

Syntax

```
HRESULT     CreateFrame (BMDSwitcherPixelFormat pixelFormat, uint32_t width,
            uint32_t height, IBMDSwitcherFrame* frame);
```

Parameters

Name	Direction	Description
pixelFormat	in	The pixel format. See **BMDSwitcherPixelFormat** for a list of supported pixel formats.
width	in	The frame width in pixels.
height	in	The frame height in pixels.
frame	out	The newly created frame.

Return Values

Value	Description
E_POINTER	The frame parameter is invalid.
E_INVALIDARG	The **pixelFormat**, width or height parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_FAIL	Failure.
S_OK	Success.

4.3.14.5 IBMDSwitcherMediaPool::CreateAudio method

The **CreateAudio** method creates an **IBMDSwitcherAudio** object.

Syntax

```
HRESULT     CreateAudio (uint32_t sizeBytes, IBMDSwitcherAudio* audio);
```

Parameters

Name	Direction	Description
sizeBytes	in	The audio's buffer size in bytes.
audio	out	The newly created audio object.

Return Values

Value	Description
E_POINTER	The audio parameter is invalid.
E_INVALIDARG	The sizeBytes parameter is invalid.
E_OUTOFMEMORY	Unable to allocate required memory.
E_FAIL	Failure.
S_OK	Success.

4.3.14.6 IBMDSwitcherMediaPool::GetFrameTotalForClips method

The **GetFrameTotalForClips** method gets the total number of frames available to clips.

Syntax

```
HRESULT     GetFrameTotalForClips  (uint32_t* total);
```

Parameters

Name	Direction	Description
clipCount	out	The number of clips.

Return Values

Value	Description
E_POINTER	The total parameter is invalid.
S_OK	Success.

4.3.14.7 IBMDSwitcherMediaPool::GetClipMaxFrameCounts method

The **GetClipMaxFrameCounts** method gets the maximum frame count for all clips.

Syntax

```
HRESULT     GetFrameTotalForClips
            (uint32_t clipCount, uint32_t* clipMaxFrameCounts);
```

Parameters

Name	Direction	Description
clipCount	in	Length of **clipMaxFrameCounts** array. This must match the switcher clip count.
clipMaxFrameCounts	out	A **clipCount** length array, where each element receives the maximum frame count for its respective clip index.

Return Values

Value	Description
E_POINTER	The **clipMaxFrameCounts** parameter is invalid.
E_INVALIDARG	The **clipCount** parameter is invalid.
S_OK	Success.

4.3.14.8 IBMDSwitcherMediaPool::Clear method

The **Clear** method invalidates all stills, clips and clip audio.

Syntax

```
HRESULT     Clear ();
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

4.3.14.9 IBMDSwitcherMediaPool::SetClipMaxFrameCounts method

The **SetClipMaxFrameCounts** method sets the maximum frame count for all clips.

Syntax

```
HRESULT     SetClipMaxFrameCounts (uint32_t clipCount, const uint32_t*
            clipMaxFrameCounts);
```

Parameters

Name	Direction	Description
clipCount	in	Length of **clipMaxFrameCounts** array. This must match the switcher clip count.
clipMaxFrameCounts	in	A clipCount length array, where each element sets the maximum frame count for its respective clip index.

Return Values

Value	Description
E_POINTER	The **clipMaxFrameCounts** parameter is invalid.
E_INVALIDARG	The clipCount parameter is invalid.
S_OK	Success.

4.3.14.10 IBMDSwitcherMediaPool::DoesVideoModeChangeClearMediaPool method

The **DoesVideoModeChangeClearMediaPool** method determines if changing to the specified video standard will clear the media pool.

Syntax

```
HRESULT     DoesVideoModeChangeClearMediaPool(BMDSwitcherVideoMode videoMode,
            Boolean* clear)
```

Parameters

Name	Direction	Description
videoMode	in	The video standard.
clear	out	Boolean value that is true if changing to the video standard will clear the media pool.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The videoMode is not a valid video standard.
E_POINTER	The required parameter is invalid.

4.3.14.11 IBMDSwitcherMediaPool::AddCallback method

The **AddCallback** method configures a callback to be called when an event occurs for an **IBMDSwitcherMediaPool** object. Pass an object implementing the **IBMDSwitcherMediaPoolCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     SetClipMaxFrameCounts
            (uint32_t clipCount, const uint32_t* clipMaxFrameCounts);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMediaPoolCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

4.3.14.12 IBMDSwitcherMediaPool::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherMediaPoolCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMediaPoolCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

Section 5 — Keyers

Any form of a keyer available in our switchers use these API components to perform keying.

5.1 Key Data Types

5.1.1 Key Type

BMDSwitcherKeyType enumerates the possible key types, used by **IBMDSwitcherKey** object interface.

- **bmdSwitcherKeyTypeLuma**
  Luminance key.
- **bmdSwitcherKeyTypeChroma**
  Chroma key.
- **bmdSwitcherKeyTypePattern**
  Pattern key.
- **bmdSwitcherKeyTypeDVE**
  DVE key.

5.1.2 Fly Key Frames

BMDSwitcherFlyKeyFrame is a bit set that enumerates possible key frames for a fly key, used by **IBMDSwitcherKeyFlyParameters** object interface.

- **bmdSwitcherFlyKeyFrameFull**
  Full screen.
- **bmdSwitcherFlyKeyFrameInfinityCentreOfKey**
  Infinity at centre of key.
- **bmdSwitcherFlyKeyFrameInfinityTopLeft**
  Infinity at top left of screen.
- **bmdSwitcherFlyKeyFrameInfinityTop**
  Infinity at top centre of screen.
- **bmdSwitcherFlyKeyFrameInfinityTopRight**
  Infinity at top right of screen.
- **bmdSwitcherFlyKeyFrameInfinityLeft**
  Infinity at mid left of screen.
- **bmdSwitcherFlyKeyFrameInfinityCentre**
  Infinity at centre of screen.
- **bmdSwitcherFlyKeyFrameInfinityRight**
  Infinity at mid right of screen.
- **bmdSwitcherFlyKeyFrameInfinityBottomLeft**
  Infinity at bottom left of screen.
- **bmdSwitcherFlyKeyFrameInfinityBottom**
  Infinity at bottom centre of screen.
- **bmdSwitcherFlyKeyFrameInfinityBottomRight**
  Infinity at bottom right of screen.
- **bmdSwitcherFlyKeyFrameA**
  User-defined key frame A.
- **bmdSwitcherFlyKeyFrameB**
  User-defined key frame B.

5.1.3 Border Bevel Options

BMDSwitcherBorderBevelOption enumerates possible border bevel style options. This type is used by **IBMDSwitcherKeyDVEParameters** and **IBMDSwitcherInputSuperSource** object interfaces.

- **bmdSwitcherBorderBevelOptionNone**
  No bevel.
- **bmdSwitcherBorderBevelOptionInOut**
  Both inner and outer bevel.
- **bmdSwitcherBorderBevelOptionIn**
  Inner bevel only.
- **bmdSwitcherBorderBevelOptionOut**
  Outer bevel only.

5.1.4 Key Event Type

BMDSwitcherKeyEventType enumerates the possible event types for **IBMDSwitcherKeyCallback**.

- **bmdSwitcherKeyEventTypeTypeChanged**
  The type changed.
- **bmdSwitcherKeyEventTypeInputCutChanged**
  The cut input source changed.
- **bmdSwitcherKeyEventTypeInputFillChanged**
  The fill input source changed.
- **bmdSwitcherKeyEventTypeOnAirChanged**
  The on-air flag changed.
- **bmdSwitcherKeyEventTypeCanBeDVEKeyChanged**
  The can-be-DVE flag changed.
- **bmdSwitcherKeyEventTypeMaskedChanged**
  The masked flag changed.
- **bmdSwitcherKeyEventTypeMaskTopChanged**
  The mask top value changed.
- **bmdSwitcherKeyEventTypeMaskBottomChanged**
  The mask bottom value changed.
- **bmdSwitcherKeyEventTypeMaskLeftChanged**
  The mask left value changed.
- **bmdSwitcherKeyEventTypeMaskRightChanged**
  The mask right value changed.

5.1.5 Luminance Key Parameters Event Type

BMDSwitcherKeyLumaParametersEventType enumerates the possible event types for **IBMDSwitcherKeyLumaParametersCallback**.

- **bmdSwitcherKeyLumaParametersEventTypePreMultipliedChanged**
  The pre-multiplied flag changed.
- **bmdSwitcherKeyLumaParametersEventTypeClipChanged**
  The clip value changed.
- **bmdSwitcherKeyLumaParametersEventTypeGainChanged**
  The gain value changed.
- **bmdSwitcherKeyLumaParametersEventTypeInverseChanged**
  The inverse flag changed.

5.1.6 Chroma Key Parameters Event Type

BMDSwitcherKeyChromaParametersEventType enumerates the possible event types for **IBMDSwitcherKeyChromaParametersCallback**.

- **bmdSwitcherKeyChromaParametersEventTypeHueChanged**
  The hue value changed.
- **bmdSwitcherKeyChromaParametersEventTypeGainChanged**
  The gain value changed.
- **bmdSwitcherKeyChromaParametersEventTypeYSuppressChanged**
  The y-suppress value changed.
- **bmdSwitcherKeyChromaParametersEventTypeLiftChanged**
  The lift value changed.
- **bmdSwitcherKeyChromaParametersEventTypeNarrowChanged**
  The narrow flag changed.

5.1.7 Pattern Key Parameters Event Type

BMDSwitcherKeyAdvancedChromaParametersEventType enumerates the possible event types for **IBMDSwitcherKeyAdvancedChromaParametersCallback.**

- **bmdSwitcherKeyAdvancedChromaParametersEventTypeForegroundLevelChanged**
  The key adjustment foreground level value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeBackgroundLevelChanged**
  The key adjustment background level value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeKeyEdgeChanged**
  The key adjustment key edge value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeSpillSuppressChanged**
  The chroma correction spill suppress value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeFlareSuppressChanged**
  The chroma correction flare suppress value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeBrightnessChanged**
  The color adjustment brightness value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeContrastChanged**
  The color adjustment contrast value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeSaturationChanged**
  The color adjustment saturation value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeRedChanged**
  The color adjustment red value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeGreenChanged**
  The color adjustment green value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeBlueChanged**
  The color adjustment blue value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeSamplingModeEnabled Changed** The sampling mode enabled flag changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypePreviewEnabledChanged**
  The preview enabled flag changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeCursorXPositionChanged**
  The cursor X position value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeCursorYPositionChanged**
  The cursor Y position value changed.

- **bmdSwitcherKeyAdvancedChromaParametersEventTypeCursorSizeChanged**
  The cursor size value changed.
- **bmdSwitcherKeyAdvancedChromaParametersEventTypeSampledColorChanged**
  The sampled color value changed.

5.1.8 Pattern Key Parameters Event Type

BMDSwitcherKeyPatternParametersEventType enumerates the possible event types for **IBMDSwitcherKeyPatternParametersCallback**.

- **bmdSwitcherKeyPatternParametersEventTypePatternChanged**
  The pattern style changed.
- **bmdSwitcherKeyPatternParametersEventTypeSizeChanged**
  The size value changed.
- **bmdSwitcherKeyPatternParametersEventTypeSymmetryChanged**
  The symmetry value changed.
- **bmdSwitcherKeyPatternParametersEventTypeSoftnessChanged**
  The softness value changed.
- **bmdSwitcherKeyPatternParametersEventTypeHorizontalOffsetChanged**
  The horizontal offset changed.
- **bmdSwitcherKeyPatternParametersEventTypeVerticalOffsetChanged**
  The vertical offset changed.
- **bmdSwitcherKeyPatternParametersEventTypeInverseChanged**
  The inverse flag changed.

5.1.9 DVE Key Parameters Event Type

BMDSwitcherKeyDVEParametersEventType enumerates the possible event types for **IBMDSwitcherKeyDVEParametersCallback**.

- **bmdSwitcherKeyDVEParametersEventTypeShadowChanged**
  The shadow flag changed.
- **bmdSwitcherKeyDVEParametersEventTypeLightSourceDirectionChanged**
  The light source direction value changed.
- **bmdSwitcherKeyDVEParametersEventTypeLightSourceAltitudeChanged**
  The light source altitude value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderEnabledChanged**
  The border enabled flag changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderBevelChanged**
  The border bevel option changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderWidthInChanged**
  The border inner width value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderWidthOutChanged**
  The border outer width value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderSoftnessInChanged**
  The border inner softness value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderSoftnessOutChanged**
  The border outer softness value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderBevelSoftnessChanged**
  The border bevel softness value changed.

- **bmdSwitcherKeyDVEParametersEventTypeBorderBevelPositionChanged**
  The border bevel position value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderOpacityChanged**
  The border opacity value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderHueChanged**
  The border hue value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderSaturationChanged**
  The border saturation value changed.
- **bmdSwitcherKeyDVEParametersEventTypeBorderLumaChanged**
  The border luminance value changed.
- **bmdSwitcherKeyDVEParametersEventTypeMaskedChanged**
  The masked flag changed.
- **bmdSwitcherKeyDVEParametersEventTypeMaskTopChanged**
  The mask top value changed.
- **bmdSwitcherKeyDVEParametersEventTypeMaskBottomChanged**
  The mask bottom value changed.
- **bmdSwitcherKeyDVEParametersEventTypeMaskLeftChanged**
  The mask left value changed.
- **bmdSwitcherKeyDVEParametersEventTypeMaskRightChanged**
  The mask right value changed.

5.1.10 Fly Key Parameters Event Type

BMDSwitcherKeyFlyParametersEventType enumerates the possible event types for **IBMDSwitcherKeyFlyParametersCallback**.

- **bmdSwitcherKeyFlyParametersEventTypeFlyChanged**
  The fly flag changed.
- **bmdSwitcherKeyFlyParametersEventTypeCanFlyChanged**
  The can-fly flag changed.
- **bmdSwitcherKeyFlyParametersEventTypeRateChanged**
  The rate value changed.
- **bmdSwitcherKeyFlyParametersEventTypeSizeXChanged**
  The size x value changed.
- **bmdSwitcherKeyFlyParametersEventTypeSizeYChanged**
  The size y value changed.
- **bmdSwitcherKeyFlyParametersEventTypePositionXChanged**
  The position x value changed.
- **bmdSwitcherKeyFlyParametersEventTypePositionYChanged**
  The position y value changed.
- **bmdSwitcherKeyFlyParametersEventTypeRotationChanged**
  The rotation value changed.
- **bmdSwitcherKeyFlyParametersEventTypeIsKeyFrameStoredChanged**
  The is-key-frame-stored flag changed.
- **bmdSwitcherKeyFlyParametersEventTypeIsAtKeyFramesChanged**
  The is-at-key-frames status changed.
- **bmdSwitcherKeyFlyParametersEventTypeIsRunningChanged**
  The is-running status changed.

5.1.11 Downstream Key Event Type

BMDSwitcherDownstreamKeyEventType enumerates the possible event types for **IBMDSwitcherDownstreamKeyCallback**.

- **bmdSwitcherDownstreamKeyEventTypeInputCutChanged**
  The cut input source changed.
- **bmdSwitcherDownstreamKeyEventTypeInputFillChanged**
  The fill input source changed.
- **bmdSwitcherDownstreamKeyEventTypeTieChanged**
  The tie flag changed.
- **bmdSwitcherDownstreamKeyEventTypeRateChanged**
  The rate value changed.
- **bmdSwitcherDownstreamKeyEventTypeOnAirChanged**
  The on-air flag changed.
- **bmdSwitcherDownstreamKeyEventTypeIsTransitioningChanged**
  The is-transitioning flag changed.
- **bmdSwitcherDownstreamKeyEventTypeIsAutoTransitioningChanged**
  The is-auto-transitioning flag changed.
- **bmdSwitcherDownstreamKeyEventTypeIsTransitionTowardsOnAirChanged**
  The is-transitioning-towards-on-air flag changed.
- **bmdSwitcherDownstreamKeyEventTypeFramesRemainingChanged**
  The frames remaining value changed.
- **bmdSwitcherDownstreamKeyEventTypePreMultipliedChanged**
  The pre-multiplied flag changed.
- **bmdSwitcherDownstreamKeyEventTypeClipChanged**
  The clip value changed.
- **bmdSwitcherDownstreamKeyEventTypeGainChanged**
  The gain value changed.
- **bmdSwitcherDownstreamKeyEventTypeInverseChanged**
  The inverse flag changed.
- **bmdSwitcherDownstreamKeyEventTypeMaskedChanged**
  The masked flag changed.
- **bmdSwitcherDownstreamKeyEventTypeMaskTopChanged**
  The mask top value changed.
- **bmdSwitcherDownstreamKeyEventTypeMaskBottomChanged**
  The mask bottom value changed.
- **bmdSwitcherDownstreamKeyEventTypeMaskLeftChanged**
  The mask left value changed.
- **bmdSwitcherDownstreamKeyEventTypeMaskRightChanged**
  The mask right value changed.

5.2 Interface Reference

5.2.1 IBMDSwitcherKeyIterator Interface

The **IBMDSwitcherKeyIterator** is used to enumerate the available keys for each mix effect block.

A reference to an **IBMDSwitcherKeyIterator** object interface may be obtained from an **IBMDSwitcherMixEffectBlock** object interface using the CreateIterator method. Pass **IID_IBMDSwitcherKeyIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMix EffectBlock	IID_IBMDSwitcherMix EffectBlock	**IBMDSwitcherMixEffectBlock::CreateIterator** can return an **IBMDSwitcherKeyIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherKey** object interface.

5.2.1.1 IBMDSwitcherKeyIterator::Next method

The Next method returns the next available **IBMDSwitcherKey** object interface.

Syntax

```
HRESULT     Next (IBMDSwitcherKey* key);
```

Parameters

Name	Direction	Description
key	out	**IBMDSwitcherKey** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherKey** objects available.
E_POINTER	The key parameter is invalid.

5.2.2 IBMDSwitcherKey Interface

The **IBMDSwitcherKey** object interface is used for manipulating the basic settings of a key. Please note that the mask settings in this interface only apply to luminance, chroma and pattern key types; DVE type key uses its own mask settings available in the **IBMDSwitcherKeyDVEParameters** interface.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyIterator	IID_IBMDSwitcherKeyIterator	An **IBMDSwitcherKey** object will be returned after a successful call to **IBMDSwitcherKeyIterator::Next method.**

Public Member Functions	
Method	**Description**
DoesSupportAdvancedChroma	The **DoesSupportAdvancedChroma** method determines if advanced chroma key is supported by the switcher.
GetType	Get the current key type.
SetType	Set the key type.
GetInputCut	Get the current cut input source.
SetInputCut	Set the cut input source.
GetInputFill	Get the current fill input source.
SetInputFill	Set the fill input source.
GetFillInputAvailabilityMask	Get the availability mask for the fill of this input.
GetCutInputAvailabilityMask	Get the availability mask for the cut of this input.
GetOnAir	Get the on-air flag.
SetOnAir	Set the on-air flag.
GetCanBeDVEKey	Determine if this key can be set to DVE type.
GetMasked	Get the current masked flag.
SetMasked	Set the masked flag.
GetMaskTop	Get the current mask top value.
SetMaskTop	Set the mask top value.
GetMaskBottom	Get the current mask bottom value.
SetMaskBottom	Set the mask bottom value.
GetMaskLeft	Get the current mask left value.
SetMaskLeft	Set the mask left value.
GetMaskRight	Get the current mask right value.
SetMaskRight	Set the mask right value.
ResetMask	Reset mask to default values.
GetTransitionSelectionMask	Get the corresponding **BMDSwitcherTransitionSelection** bit mask for this key.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.2.1 IBMDSwitcherKey::DoesSupportAdvancedChroma method

The DoesSupportAdvancedChroma method determines if advanced chroma key is supported by the switcher.

Syntax

```
HRESULT     DoesSupportAdvancedChroma (boolean* supportsAdvancedChroma)
```

Parameters

Name	Direction	Description
supportsAdvancedChroma	out	Boolean value describing whether the advanced chroma key is supported by the switcher.

5.2.2.2 IBMDSwitcherKey::GetType method

The **GetType** method returns the current key type.

Syntax

```
HRESULT     GetType (BMDSwitcherKeyType* type);
```

Parameters

Name	Direction	Description
type	out	The current key type.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The type parameter is invalid.
E_UNEXPECTED	Unexpected error occurred.

5.2.2.3 IBMDSwitcherKey::SetType method

The **SetType** method sets the key to the specified type.

Syntax

```
HRESULT     SetType (BMDSwitcherKeyType type);
```

Parameters

Name	Direction	Description
type	in	The desired key type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The type parameter is invalid.

5.2.2.4 IBMDSwitcherKey::GetInputCut method

The **GetInputCut** method returns the selected cut input source.

Syntax

```
HRESULT     GetInputCut (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	**BMDSwitcherInputId** of the selected cut input source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

5.2.2.5 IBMDSwitcherKey::SetInputCut method

The **SetInputCut** method sets the cut input source.

Syntax

```
HRESULT     SetInputCut (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	The desired cut input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The inputId parameter is invalid.

5.2.2.6 IBMDSwitcherKey::GetInputFill method

The **GetInputFill** method returns the selected fill input source.

Syntax

```
HRESULT     GetInputFill (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	**BMDSwitcherInputId** of the selected fill input source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

5.2.2.7 IBMDSwitcherKey::SetInputFill method

The **SetInputFill** method sets the fill input source.

Syntax

```
HRESULT     SetInputFill (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	The desired fill input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The inputId parameter is invalid.

5.2.2.8 IBMDSwitcherKey::GetFillInputAvailabilityMask method

The **GetFillInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for fill inputs available to this key. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a fill input for this key.

Syntax

```
HRESULT    GetFillInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

5.2.2.9 IBMDSwitcherKey::GetCutInputAvailabilityMask method

The **GetCutInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for cut inputs available to this key. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a cut input for this key.

Syntax

```
HRESULT    GetCutInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

5.2.2.10 IBMDSwitcherKey::GetOnAir method

The **GetOnAir** method returns the on-air flag.

Syntax

```
HRESULT     GetOnAir (boolean* onAir);
```

Parameters

Name	Direction	Description
onAir	out	Boolean on-air flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The onAir parameter is invalid.

5.2.2.11 IBMDSwitcherKey::SetOnAir method

The **SetOnAir** method sets the on-air flag.

Syntax

```
HRESULT     SetOnAir (boolean onAir);
```

Parameters

Name	Direction	Description
onAir	in	The desired on-air flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.12 IBMDSwitcherKey::CanBeDVEKey method

The **CanBeDVEKey** method returns a status flag of whether this key can be set to the DVE type. The DVE hardware is a shared resource; if another component is currently using the resource, it may not be available for this key.

Syntax

```
HRESULT     CanBeDVEKey (boolean* canDVE);
```

Parameters

Name	Direction	Description
canDVE	out	Boolean status of whether this key can be a DVE key.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canDVE parameter is invalid.

5.2.2.13 IBMDSwitcherKey::GetMasked method

The **GetMasked** method returns whether masking is enabled or not.

Syntax

```
HRESULT     GetMasked (boolean* masked);
```

Parameters

Name	Direction	Description
masked	out	Boolean flag of whether masking is enabled.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The masked parameter is invalid.

5.2.2.14 IBMDSwitcherKey::SetMasked method

Use **SetMasked** method to enable or disable masking.

Syntax

```
HRESULT     SetMasked (boolean masked);
```

Parameters

Name	Direction	Description
masked	in	The desired masked value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.15 IBMDSwitcherKey::GetMaskTop method

The **GetMaskTop** method returns the current mask top value.

Syntax

```
HRESULT     GetMaskTop (double* maskTop);
```

Parameters

Name	Direction	Description
maskTop	out	The current mask top value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskTop parameter is invalid.

5.2.2.16 IBMDSwitcherKey::SetMaskTop method

The **SetMaskTop** method sets the mask top value.

Syntax

```
HRESULT     SetMaskTop (double maskTop);
```

Parameters

Name	Direction	Description
maskTop	in	The desired mask top value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.17 IBMDSwitcherKey::GetMaskBottom method

The **GetMaskBottom** method returns the current mask bottom value.

Syntax

```
HRESULT     GetMaskBottom (double* maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	out	The current mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskBottom parameter is invalid.

5.2.2.18 IBMDSwitcherKey::SetMaskBottom method

The **SetMaskBottom** method sets the mask bottom value.

Syntax

```
HRESULT     SetMaskBottom (double maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	in	The desired mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.19 IBMDSwitcherKey::GetMaskLeft method

The **GetMaskLeft** method returns the current mask left value.

Syntax

```
HRESULT     GetMaskLeft (double* maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	out	The current mask left value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskLeft parameter is invalid.

5.2.2.20 IBMDSwitcherKey::SetMaskLeft method

The **SetMaskLeft** method sets the mask left value.

Syntax

```
HRESULT     SetMaskLeft (double maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	in	The desired mask left value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.21 IBMDSwitcherKey::GetMaskRight method

The **GetMaskRight** method returns the current mask right value.

Syntax

```
HRESULT     GetMaskRight (double* maskRight);
```

Parameters

Name	Direction	Description
maskRight	out	The current mask right value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskRight parameter is invalid.

5.2.2.22 IBMDSwitcherKey::SetMaskRight method

The **SetMaskRight** method sets the mask right value.

Syntax

```
HRESULT     SetMaskRight (double maskRight);
```

Parameters

Name	Direction	Description
maskRight	in	The desired mask right value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.23 IBMDSwitcherKey::ResetMask method

Use the **ResetMask** method to reset mask settings to default values.

Syntax

```
HRESULT     ResetMask (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.2.24 IBMDSwitcherKey::GetTransitionSelectionMask method

The **GetTransitionSelectionMask** method returns the corresponding **BMDSwitcherTransitionSelection** bit mask for this key.

Syntax

```
HRESULT     GetTransitionSelectionMask (BMDSwitcherTransitionSelection* selectionMask);
```

Parameters

Name	Direction	Description
selectionMask	out	**BMDSwitcherTransitionSelection** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The selectionMask parameter is invalid.

5.2.2.25 IBMDSwitcherKey::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKey** object. Pass an object implementing the **IBMDSwitcherKeyCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.2.26 IBMDSwitcherKey::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.3 IBMDSwitcherKeyCallback Interface

The **IBMDSwitcherKeyCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKey** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyCallback** object interface is installed with **IBMDSwitcherKey::AddCallback** and removed with **IBMDSwitcherKey::RemoveCallback.**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.3.1 IBMDSwitcherKeyCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKey** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.4 IBMDSwitcherKeyLumaParameters Interface

The **IBMDSwitcherKeyLumaParameters** object interface is used for manipulating parameters specific to luminance type key.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyLumaParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface.**

Public Member Functions	
Method	**Description**
GetPreMultiplied	Get the current pre-multiplied flag.
SetPreMultiplied	Set pre-multiplied flag.
GetClip	Get the current clip value.
SetClip	Set the clip value.
GetGain	Get the current gain value.
SetGain	Set gain value.
GetInverse	Get the current inverse flag.
SetInverse	Set the inverse flag.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.4.1 IBMDSwitcherKeyLumaParameters::GetPreMultiplied method

The **GetPreMultiplied** method returns the current pre-multiplied flag.

Syntax

```
HRESULT    GetPreMultiplied (boolean* preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	out	The current pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The preMultiplied parameter is invalid.

5.2.4.2 IBMDSwitcherKeyLumaParameters::SetPreMultiplied method

The **SetPreMultiplied** method sets the pre-multiplied flag.

> **NOTE** That clip, gain and inverse controls are not used when pre-multiplied flag is set to true.

Syntax

```
HRESULT     SetPreMultiplied (boolean preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	in	The desired pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.4.3 IBMDSwitcherKeyLumaParameters::GetClip method

The **GetClip** method returns the current clip value.

Syntax

```
HRESULT     GetClip (double* clip);
```

Parameters

Name	Direction	Description
clip	out	The current clip value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clip parameter is invalid.

5.2.4.4 IBMDSwitcherKeyLumaParameters::SetClip method

The **SetClip** method sets the clip value.

Syntax

```
HRESULT     SetClip (double clip);
```

Parameters

Name	Direction	Description
clip	in	The desired clip value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.4.5 IBMDSwitcherKeyLumaParameters::GetGain method

The **GetGain** method returns the current gain value.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

5.2.4.6 IBMDSwitcherKeyLumaParameters::SetGain method

The **SetGain** method sets the gain value.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.4.7 IBMDSwitcherKeyLumaParameters::GetInverse method

The **GetInverse** method returns the current inverse flag.

Syntax

```
HRESULT    GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

5.2.4.8 IBMDSwitcherKeyLumaParameters::SetInverse method

The **SetInverse** method sets the inverse flag.

Syntax

```
HRESULT    SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.4.9 IBMDSwitcherKeyLumaParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyLumaParameters** object. Pass an object implementing the **IBMDSwitcherKeyLumaParametersCallback** interface to receive callbacks.
Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyLumaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyLumaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.4.10 IBMDSwitcherKeyLumaParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyLumaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyLumaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.5 IBMDSwitcherKeyLumaParametersCallback Interface

The **IBMDSwitcherKeyLumaParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyLumaParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyLuma Parameters	IID_IBMDSwitcherKeyLuma Parameters	An **IBMDSwitcherKeyLumaParametersCallback** object interface is installed with **IBMDSwitcherKeyLumaParameters::AddCallback** and removed with **IBMDSwitcherKeyLumaParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.5.1 IBMDSwitcherKeyLumaParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyLumaParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyLumaParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyLumaParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6 IBMDSwitcherKeyChromaParameters Interface

The **IBMDSwitcherKeyChromaParameters** object interface is used for manipulating settings specific to the chroma type key.

If a switcher is capable of using advanced chroma key, then this interface will not be available. Only if **IBMDSwitcherKey::DoesSupportAdvancedChroma** returns false, does the switcher support this **IBMDSwitcherKeyChromaParameters** interface.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyChromaParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface.**

Public Member Functions	
Method	**Description**
GetHue	Get the current hue value.
SetHue	Set the hue value.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetYSuppress	Get the current y-suppress flag.
SetYSuppress	Set the y-suppress flag.
GetLift	Get the current lift value.
SetLift	Set the lift value.
GetNarrow	Get the current narrow flag.
SetNarrow	Set the narrow flag.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.6.1 IBMDSwitcherKeyChromaParameters::GetHue method

The **GetHue** method gets the current hue value.

Syntax

```
HRESULT     GetHue (double* hue);
```

Parameters

Name	Direction	Description
hue	out	The current hue value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hue parameter is invalid.

5.2.6.2 IBMDSwitcherKeyChromaParameters::SetHue method

The **SetHue** method sets the hue value.

Syntax

```
HRESULT     SetHue (double hue);
```

Parameters

Name	Direction	Description
hue	in	The desired hue value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6.3 IBMDSwitcherKeyChromaParameters::GetGain method

The **GetGain** method gets the current gain value.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

5.2.6.4 IBMDSwitcherKeyChromaParameters::SetGain method

The **SetGain** method sets the gain value.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6.5 IBMDSwitcherKeyChromaParameters::GetYSuppress method

The **GetYSuppress** method gets the current y-suppress value.

Syntax

```
HRESULT     GetYSuppress (double* ySuppress);
```

Parameters

Name	Direction	Description
ySuppress	out	The current y-suppress value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ySuppress parameter is invalid.

5.2.6.6 IBMDSwitcherKeyChromaParameters::SetYSuppress method

The **SetYSuppress** method sets the y-suppress value.

Syntax

```
HRESULT     SetYSuppress (double ySuppress);
```

Parameters

Name	Direction	Description
ySuppress	in	The desired ySuppress value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6.7 IBMDSwitcherKeyChromaParameters::GetLift method

The **GetLift** method gets the current lift value.

Syntax

```
HRESULT     GetLift (double* lift);
```

Parameters

Name	Direction	Description
lift	out	The current lift value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The lift parameter is invalid.

5.2.6.8 IBMDSwitcherKeyChromaParameters::SetLift method

The **SetLift** method sets the lift value.

Syntax

```
HRESULT     SetLift (double lift);
```

Parameters

Name	Direction	Description
lift	in	The desired lift value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6.9 IBMDSwitcherKeyChromaParameters::GetNarrow method

The **GetNarrow** method gets the current narrow flag.

Syntax

```
HRESULT     GetNarrow (boolean* narrow);
```

Parameters

Name	Direction	Description
narrow	out	The current narrow flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The narrow parameter is invalid.

5.2.6.10 IBMDSwitcherKeyChromaParameters::SetNarrow method

The **SetNarrow** method sets the narrow flag.

Syntax

```
HRESULT     SetNarrow (boolean narrow);
```

Parameters

Name	Direction	Description
narrow	in	The desired narrow flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.6.11 IBMDSwitcherKeyChromaParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyChromaParameters** object. Pass an object implementing the **IBMDSwitcherKeyChromaParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyChromaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyChromaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.6.12 IBMDSwitcherKeyChromaParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyChromaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyChromaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.7 IBMDSwitcherKeyChromaParametersCallback Interface

The **IBMDSwitcherKeyChromaParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyChromaParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyChroma Parameters	IID_IBMDSwitcherKeyChroma Parameters	An **IBMDSwitcherKeyChromaParametersCallback** object interface is installed with **IBMDSwitcherKeyChromaParameters::AddCallback** and removed with **IBMDSwitcherKeyChromaParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.7.1 IBMDSwitcherKeyChromaParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyChromaParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyChromaParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyChromaParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8 IBMDSwitcherKeyAdvancedChromaParameters Interface

The **IBMDSwitcherKeyAdvancedChromaParameters** object interface is used for manipulating settings specific to the advanced chroma type key.

Advanced chroma key is an improved version of chroma key and is not available on all models of switchers. Use **IBMDSwitcherKey::DoesSupportAdvancedChroma** to determine if a switcher supports the **IBMDSwitcherKeyAdvancedChromaParameters** interface.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyAdvancedChromaParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface**.

Public Member Functions	
Method	**Description**
GetForegroundLevel	Get the current key adjustment foreground level value.
SetForegroundLevel	Set the key adjustment foreground level value.
GetBackgroundLevel	Get the current key adjustment background level value.
SetBackgroundLevel	Set the key adjustment background level value.
GetKeyEdge	Get the current key adjustment key edge value.
SetKeyEdge	Set the key adjustment key edge value.
GetSpillSuppress	Get the current chroma correction spill suppress value.
SetSpillSuppress	Set the chroma correction spill suppress value.
GetFlareSuppress	Get the current chroma correction flare suppress value.
SetFlareSuppress	Set the chroma correction flare suppress value.
GetBrightness	Get the current color adjustment brightness value.
SetBrightness	Set the color adjustment brightness value.
GetContrast	Get the current color adjustment contrast value.
SetContrast	Set the color adjustment contrast value.
GetSaturation	Get the current color adjustment saturation value.
SetSaturation	Set the color adjustment saturation value.
GetRed	Get the current color adjustment red value.
SetRed	Set the color adjustment red value.
GetGreen	Get the current color adjustment green value.
SetGreen	Set the color adjustment green value.
GetBlue	Get the current color adjustment blue value.
SetBlue	Set the color adjustment blue value.

Public Member Functions	
Method	**Description**
GetSamplingModeEnabled	Get the current sampling mode enabled flag.
SetSamplingModeEnabled	Set the sampling mode enabled flag.
GetPreviewEnabled	Get the current preview enabled flag.
SetPreviewEnabled	Set the preview enabled flag.
GetCursorXPosition	Get the current cursor x position.
SetCursorXPosition	Set the cursor x position.
GetCursorYPosition	Get the current cursor y position.
SetCursorYPosition	Set the cursor y position.
GetCursorSize	Get the current cursor size.
SetCursorSize	Set the cursor size.
GetSampledColor	Get the current sampled color.
SetSampledColor	Set the sampled color.
ResetKeyAdjustments	Reset key adjustment properties to default values.
ResetChromaCorrection	Reset chroma correction properties to default values.
ResetColorAdjustments	Reset color adjustment properties to default values.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.8.1 IBMDSwitcherKeyAdvancedChromaParameters:: GetForegroundLevel method

The **GetForegroundLevel** method gets the current key adjustment foreground level value.

Syntax

```
HRESULT    GetForegroundLevel (double* level);
```

Parameters

Name	Direction	Description
level	out	The current key adjustment foreground level value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The level parameter is invalid.

5.2.8.2 IBMDSwitcherKeyAdvancedChromaParameters::SetForegroundLevel method

The **SetForegroundLevel** method sets the key adjustment foreground level value.

Syntax

```
HRESULT     SetForegroundLevel (double level);
```

Parameters

Name	Direction	Description
level	in	The desired key adjustment foreground level value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.3 IBMDSwitcherKeyAdvancedChromaParameters::GetBackgroundLevel method

The **GetBackgroundLevel** method gets the current key adjustment background level value.

Syntax

```
HRESULT     GetBackgroundLevel (double* level);
```

Parameters

Name	Direction	Description
level	out	The current key adjustment background level value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The level parameter is invalid.

5.2.8.4 IBMDSwitcherKeyAdvancedChromaParameters::SetForegroundLevel method

The **SetBackgroundLevel** method sets the key adjustment background level value.

Syntax

```
HRESULT     SetBackgroundLevel (double level);
```

Parameters

Name	Direction	Description
level	in	The desired key adjustment background level value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.5 IBMDSwitcherKeyAdvancedChromaParameters::GetKeyEdge method

The **GetKeyEdge** method gets the current key adjustment key edge value.

Syntax

```
HRESULT     GetKeyEdge (double* keyEdge);
```

Parameters

Name	Direction	Description
keyEdge	out	The current key adjustment key edge value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The keyEdge parameter is invalid.

5.2.8.6 IBMDSwitcherKeyAdvancedChromaParameters::SetKeyEdge method

The **SetKeyEdge** method sets the key adjustment key edge value.

Syntax

```
HRESULT     SetKeyEdge (double keyEdge);
```

Parameters

Name	Direction	Description
keyEdge	in	The desired key adjustment key edge value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.7 IBMDSwitcherKeyAdvancedChromaParameters::GetSpillSuppress method

The **GetSpillSuppress** method gets the current chroma correction spill suppress value.

Syntax

```
HRESULT     GetSpillSuppress (double* spillSuppress);
```

Parameters

Name	Direction	Description
spillSuppress	out	The current chroma correction spill suppress value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The spillSuppress parameter is invalid.

5.2.8.8 IBMDSwitcherKeyAdvancedChromaParameters::SetSpillSuppress method

The **SetSpillSuppress** method sets the chroma correction spill suppress value.

Syntax

```
HRESULT    SetSpillSuppress (double spillSuppress);
```

Parameters

Name	Direction	Description
spillSuppress	in	The desired chroma correction spill suppress value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.9 IBMDSwitcherKeyAdvancedChromaParameters::GetFlareSuppress method

The **GetFlareSuppress** method gets the current chroma correction flare suppress value.

Syntax

```
HRESULT    GetFlareSuppress (double* flareSuppress);
```

Parameters

Name	Direction	Description
flareSuppress	out	The current chroma correction flare suppress value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The flareSuppress parameter is invalid.

5.2.8.10 IBMDSwitcherKeyAdvancedChromaParameters::SetFlareSuppress method

The **SetFlareSuppress** method sets the chroma correction flare suppress value.

Syntax

```
HRESULT    SetFlareSuppress (double flareSuppress);
```

Parameters

Name	Direction	Description
flareSuppress	in	The desired chroma correction flare suppress value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.11 IBMDSwitcherKeyAdvancedChromaParameters::GetBrightness method

The **GetBrightness** method gets the current color adjustment brightness value.

Syntax

```
HRESULT     GetBrightness (double* brightness);
```

Parameters

Name	Direction	Description
brightness	out	The current color adjustment brightness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The brightness parameter is invalid.

5.2.8.12 IBMDSwitcherKeyAdvancedChromaParameters::SetBrightness method

The **SetBrightness** method sets the color adjustment brightness value.

Syntax

```
HRESULT     SetBrightness (double brightness);
```

Parameters

Name	Direction	Description
brightness	in	The desired color adjustment brightness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.13 IBMDSwitcherKeyAdvancedChromaParameters::GetContrast method

The **GetContrast** method gets the current color adjustment contrast value.

Syntax

```
HRESULT     GetContrast (double* contrast);
```

Parameters

Name	Direction	Description
contrast	out	The current color adjustment contrast value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The contrast parameter is invalid.

5.2.8.14 IBMDSwitcherKeyAdvancedChromaParameters::SetContrast method

The **SetContrast** method sets the color adjustment contrast value.

Syntax

```
HRESULT     SetContrast (double contrast);
```

Parameters

Name	Direction	Description
contrast	in	The desired color adjustment contrast value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.15 IBMDSwitcherKeyAdvancedChromaParameters::GetSaturation method

The **GetSaturation** method gets the current color adjustment saturation value.

Syntax

```
HRESULT     GetSaturation (double* saturation);
```

Parameters

Name	Direction	Description
saturation	out	The current color adjustment saturation value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The saturation parameter is invalid.

5.2.8.16 IBMDSwitcherKeyAdvancedChromaParameters::SetSaturation method

The **SetSaturation** method sets the color adjustment saturation value.

Syntax

```
HRESULT     SetSaturation (double saturation);
```

Parameters

Name	Direction	Description
saturation	in	The desired color adjustment saturation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.17 IBMDSwitcherKeyAdvancedChromaParameters::GetRed method

The **GetRed** method gets the current color adjustment red value.

Syntax

```
HRESULT     GetRed (double* red);
```

Parameters

Name	Direction	Description
red	out	The current color adjustment red value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The red parameter is invalid.

5.2.8.18 IBMDSwitcherKeyAdvancedChromaParameters::SetRed method

The **SetRed** method sets the color adjustment red value.

Syntax

```
HRESULT     SetRed (double red);
```

Parameters

Name	Direction	Description
red	in	The desired color adjustment red value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.19 IBMDSwitcherKeyAdvancedChromaParameters::GetGreen method

The **GetGreen** method gets the current color adjustment green value.

Syntax

```
HRESULT     GetGreen (double* green);
```

Parameters

Name	Direction	Description
green	out	The current color adjustment green value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The green parameter is invalid.

5.2.8.20 IBMDSwitcherKeyAdvancedChromaParameters::SetGreen method

The **SetGreen** method sets the color adjustment green value.

Syntax

```
HRESULT     SetGreen (double green);
```

Parameters

Name	Direction	Description
green	in	The desired color adjustment green value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.21 IBMDSwitcherKeyAdvancedChromaParameters::GetBlue method

The **GetBlue** method gets the current color adjustment blue value.

Syntax

```
HRESULT     GetBlue (double* blue);
```

Parameters

Name	Direction	Description
blue	out	The current color adjustment blue value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The blue parameter is invalid.

5.2.8.22 IBMDSwitcherKeyAdvancedChromaParameters::SetBlue method

The **SetBlue** method sets the color adjustment blue value.

Syntax

```
HRESULT     SetBlue (double blue);
```

Parameters

Name	Direction	Description
blue	in	The desired color adjustment blue value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.23 IBMDSwitcherKeyAdvancedChromaParameters::GetSampling ModeEnabled method

The **GetSamplingModeEnabled** method gets the current sampling mode enabled flag.

Syntax

```
HRESULT     GetSamplingModeEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current sampling mode enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

5.2.8.24 IBMDSwitcherKeyAdvancedChromaParameters::SetSamplingModeEnabled method

The **SetSamplingModeEnabled** method sets the sampling mode enabled flag.

Syntax

```
HRESULT     SetSamplingModeEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired sampling mode enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.25 IBMDSwitcherKeyAdvancedChromaParameters::GetPreviewEnabled method

The **GetPreviewEnabled** method gets the current preview enabled flag.

Syntax

```
HRESULT     GetPreviewEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The enabled parameter is invalid.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

5.2.8.26 IBMDSwitcherKeyAdvancedChromaParameters::SetPreviewEnabled method

The **SetPreviewEnabled** method sets the preview enabled flag.

Syntax

```
HRESULT     SetPreviewEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired preview enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.27 IBMDSwitcherKeyAdvancedChromaParameters::GetCursorXPosition method

The **GetCursorXPosition** method gets the current cursor x position value.

Syntax

```
HRESULT     GetCursorXPosition (double* position);
```

Parameters

Name	Direction	Description
position	out	The current cursor x position value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The position parameter is invalid.

5.2.8.28 IBMDSwitcherKeyAdvancedChromaParameters::SetCursorXPosition method

The **SetCursorXPosition** method sets the cursor x position value.

Syntax

```
HRESULT     SetCursorXPosition (double position);
```

Parameters

Name	Direction	Description
position	in	The desired cursor x position value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.29 IBMDSwitcherKeyAdvancedChromaParameters::GetCursorYPosition method

The **GetCursorYPosition** method gets the current cursor y position value.

Syntax

```
HRESULT     GetCursorYPosition (double* position);
```

Parameters

Name	Direction	Description
position	out	The current cursor y position value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The position parameter is invalid.

5.2.8.30 IBMDSwitcherKeyAdvancedChromaParameters::SetCursorYPosition method

The **SetCursorYPosition** method sets the cursor y position value.

Syntax

```
HRESULT     SetCursorYPosition (double position);
```

Parameters

Name	Direction	Description
position	in	The desired cursor y position value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.31 IBMDSwitcherKeyAdvancedChromaParameters::GetCursorSize method

The **GetCursorSize** method gets the current cursor size value.

Syntax

```
HRESULT     GetCursorSize (double* size);
```

Parameters

Name	Direction	Description
size	out	The current cursor size value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The size parameter is invalid.

5.2.8.32 IBMDSwitcherKeyAdvancedChromaParameters::SetCursorSize method

The **SetCursorSize** method sets the cursor size value.

Syntax

```
HRESULT     SetCursorSize (double size);
```

Parameters

Name	Direction	Description
size	in	The desired cursor size value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.33 IBMDSwitcherKeyAdvancedChromaParameters::GetSampledColor method

The **GetSampledColor** method gets the current sampled color value. The sampled color is in YCbCr format.

Syntax

```
HRESULT    GetCursorSize (double* y, double* cb, double* cr);
```

Parameters

Name	Direction	Description
y	out	The current sampled color y value.
cb	out	The current sampled color cb value.
cr	out	The current sampled color cr value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The y, cb, or cr parameter is invalid.

5.2.8.34 IBMDSwitcherKeyAdvancedChromaParameters::SetSampledColor method

The **SetSampledColor** method sets the sampled color value. The sampled color is in YCbCr format.

Syntax

```
HRESULT    SetSampledColor (double y, double cb, double, cr);
```

Parameters

Name	Direction	Description
y	in	The desired sampled color y value.
cb	in	The desired sampled color cb value.
cr	in	The desired sampled color cr value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.35 IBMDSwitcherKeyAdvancedChromaParameters::ResetKeyAdjustments method

The **ResetKeyAdjustments** method resets the key adjustment properties to default values. This includes foreground level, background level, and key edge values.

Syntax

```
HRESULT     ResetKeyAdjustments (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.36 IBMDSwitcherKeyAdvancedChromaParameters::ResetChromaCorrection method

The **ResetChromaCorrection** method resets the chroma correction properties to default values. This includes spill suppress, and flare suppress values.

Syntax

```
HRESULT     ResetChromaCorrection (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.37 IBMDSwitcherKeyAdvancedChromaParameters::ResetColorAdjustments method

The **ResetColorAdjustments** method resets the color adjustment properties to default values. This includes brightness, contrast, saturation, red, green, and blue values.

Syntax

```
HRESULT     ResetColorAdjustments (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.8.38 IBMDSwitcherKeyAdvancedChromaParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyAdvancedChromaParameters** object. Pass an object implementing the **IBMDSwitcherKeyAdvancedChromaParametersCallback** interface to receive callbacks.

Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyAdvancedChromaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyAdvancedChromaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.8.39 IBMDSwitcherKeyAdvancedChromaParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyAdvancedChromaParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyAdvancedChromaParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.9 IBMDSwitcherKeyAdvancedChromaParametersCallback Interface

The **IBMDSwitcherKeyAdvancedChromaParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyAdvancedChromaParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyAdvanced ChromaParameters	IID_IBMDSwitcherKeyAdvanced ChromaParameters	An **IBMDSwitcherKeyAdvancedChromaParameters Callback** object interface is installed with **IBMDSwitcherKeyAdvancedChromaParameters:: AddCallback** and removed with **IBMDSwitcherKeyAdvancedChromaParameters:: RemoveCallback.**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.9.1 IBMDSwitcherKeyAdvancedChromaParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyAdvancedChromaParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyAdvancedChromaParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyAdvancedChromaParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10 IBMDSwitcherKeyPatternParameters Interface

The **IBMDSwitcherKeyPatternParameters** object interface is used for manipulating settings specific to the pattern type key.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyPatternParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface.**

Public Member Functions	
Method	**Description**
GetPattern	Get the current pattern style.
SetPattern	Set the pattern style.
GetSize	Get the current size value.
SetSize	Set the size value.
GetSymmetry	Get the current symmetry value.
SetSymmetry	Set the symmetry value.
GetSoftness	Get the current softness value.
SetSoftness	Set the softness value.
GetHorizontalOffset	Get the current horizontal offset.
SetHorizontalOffset	Set the horizontal offset.
GetVerticalOffset	Get the current vertical offset.
SetVerticalOffset	Set the vertical offset.
GetInverse	Get the current inverse flag.
SetInverse	Set the inverse flag.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.10.1 IBMDSwitcherKeyPatternParameters::GetPattern method

The **GetPattern** method gets the current pattern style.

Syntax

```
HRESULT    GetPattern (BMDSwitcherPatternStyle* pattern);
```

Parameters

Name	Direction	Description
pattern	out	The current pattern style of **BMDSwitcherPatternStyle**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The pattern parameter is invalid.

5.2.10.2 IBMDSwitcherKeyPatternParameters::SetPattern method

The **SetPattern** method sets the pattern style.

Syntax

```
HRESULT     SetPattern (BMDSwitcherPatternStyle pattern);
```

Parameters

Name	Direction	Description
pattern	in	The desired **BMDSwitcherPatternStyle** pattern style.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The pattern parameter is invalid.
E_FAIL	Failure.

5.2.10.3 IBMDSwitcherKeyPatternParameters::GetSize method

The **GetSize** method gets the current size value.

Syntax

```
HRESULT     GetSize (double* size);
```

Parameters

Name	Direction	Description
size	out	The current size value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The size parameter is invalid.

5.2.10.4 IBMDSwitcherKeyPatternParameters::SetSize method

The **SetSize** method sets the size value.

Syntax

```
HRESULT     SetSize (double size);
```

Parameters

Name	Direction	Description
size	in	The desired size value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.5 IBMDSwitcherKeyPatternParameters::GetSymmetry method

The **GetSymmetry** method gets the current symmetry value.

Syntax

```
HRESULT     GetSymmetry (double* symmetry);
```

Parameters

Name	Direction	Description
symmetry	out	The current symmetry value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The symmetry parameter is invalid.

5.2.10.6 IBMDSwitcherKeyPatternParameters::SetSymmetry method

The **SetSymmetry** method sets the symmetry value.

Syntax

```
HRESULT     SetSymmetry (double symmetry);
```

Parameters

Name	Direction	Description
symmetry	in	The desired symmetry value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.7 IBMDSwitcherKeyPatternParameters::GetSoftness method

The **GetSoftness** method gets the current softness value.

Syntax

```
HRESULT     GetSoftness (double* softness);
```

Parameters

Name	Direction	Description
softness	out	The current softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softness parameter is invalid.

5.2.10.8 IBMDSwitcherKeyPatternParameters::SetSoftness method

The **SetSoftness** method sets the softness value.

Syntax

```
HRESULT     SetSoftness (double softness);
```

Parameters

Name	Direction	Description
softness	in	The desired softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.9 IBMDSwitcherKeyPatternParameters::GetHorizontalOffset method

The **GetHorizontalOffset** method gets the current horizontal offset value.

Syntax

```
HRESULT     GetHorizontalOffset (double* hOffset);
```

Parameters

Name	Direction	Description
hOffset	out	The current horizontal offset value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hOffset parameter is invalid.

5.2.10.10 IBMDSwitcherKeyPatternParameters::SetHorizontalOffset method

The **SetHorizontalOffset** method sets the horizontal offset value.

Syntax

```
HRESULT     SetHorizontalOffset (double hOffset);
```

Parameters

Name	Direction	Description
hOffset	in	The desired horizontal offset value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.11 IBMDSwitcherKeyPatternParameters::GetVerticalOffset method

The **GetVerticalOffset** method gets the current vertical offset value.

Syntax

```
HRESULT     GetVerticalOffset (double* vOffset);
```

Parameters

Name	Direction	Description
vOffset	out	The current vertical offset value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The vOffset parameter is invalid.

5.2.10.12 IBMDSwitcherKeyPatternParameters::SetVerticalOffset method

The **SetVerticalOffset** method sets the vertical offset value.

Syntax

```
HRESULT     SetVerticalOffset (double vOffset);
```

Parameters

Name	Direction	Description
vOffset	in	The desired vertical offset value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.13 IBMDSwitcherKeyPatternParameters::GetInverse method

The **GetInverse** method gets the current inverse flag.

Syntax

```
HRESULT     GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

5.2.10.14 IBMDSwitcherKeyPatternParameters::SetInverse method

The **SetInverse** method sets the inverse flag.

Syntax

```
HRESULT     SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.10.15 IBMDSwitcherKeyPatternParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyPatternParameters** object. Pass an object implementing the **IBMDSwitcherKeyPatternParametersCallback** interface to receive callbacks.
Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyPatternParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyPatternParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.10.16 IBMDSwitcherKeyPatternParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyPatternParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyPatternParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.11 IBMDSwitcherKeyPatternParametersCallback Interface

The **IBMDSwitcherKeyPatternParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyPatternParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyPattern Parameters	IID_IBMDSwitcherKeyPattern Parameters	An **IBMDSwitcherKeyPatternParametersCallback** object interface is installed with **IBMDSwitcherKeyPatternParameters::AddCallback** and removed with **IBMDSwitcherKeyPatternParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.11.1 IBMDSwitcherKeyPatternParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyPatternParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyPatternParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyPatternParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12 IBMDSwitcherKeyDVEParameters Interface

The **IBMDSwitcherKeyDVEParameters** object interface is used for manipulating settings specific to the DVE-type key. Note that properties that affect a fly key also affects a DVE key; they are access through the **IBMDSwitcherKeyFlyParameters** object interface. Also note that the mask properties in this interface only affect keys with their type set to DVE.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyDVEParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface**.

Public Member Functions	
Method	**Description**
GetShadow	Get the current shadow flag.
SetShadow	Set the shadow flag.
GetLightSourceDirection	Get the current light source direction value.
SetLightSourceDirection	Set the light source direction value.
GetLightSourceAltitude	Get the current light source altitude value.
SetLightSourceAltitude	Set the light source altitude value.
GetBorderEnabled	Get the current border enabled flag.
SetBorderEnabled	Set the border enabled flag.
GetBorderBevel	Get the current border bevel option.
SetBorderBevel	Set the border bevel option.
GetBorderWidthIn	Get the current border inner width value.
SetBorderWidthIn	Set the border inner width value.
GetBorderWidthOut	Get the current border outer width value.
SetBorderWidthOut	Set the border outer width value.
GetBorderSoftnessIn	Get the current border inner softness value.
SetBorderSoftnessIn	Set the border inner softness value.
GetBorderSoftnessOut	Get the current border outer softness value.
SetBorderSoftnessOut	Set the border outer softness value.
GetBorderBevelSoftness	Get the current border bevel softness value.
SetBorderBevelSoftness	Set the border bevel softness value.
GetBorderBevelPosition	Get the current border bevel position value.
SetBorderBevelPosition	Set the border bevel position value.
GetBorderOpacity	Get the current border opacity value.
SetBorderOpacity	Set the border opacity value.
GetBorderHue	Get the current border hue value.

Public Member Functions	
Method	**Description**
SetBorderHue	Set the border hue value.
GetBorderSaturation	Get the current border saturation value.
SetBorderSaturation	Set the border saturation value.
GetBorderLuma	Get the current border luminance value.
SetBorderLuma	Set the border luminance value.
GetMasked	Get the current masked flag.
SetMasked	Set the masked flag.
GetMaskTop	Get the current mask top value.
SetMaskTop	Set the mask top value.
GetMaskBottom	Get the current mask bottom value.
SetMaskBottom	Set the mask bottom value.
GetMaskLeft	Get the current mask left value.
SetMaskLeft	Set the mask left value.
GetMaskRight	Get the current mask right value.
SetMaskRight	Set the mask right value.
ResetMask	Reset mask properties to default values.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.12.1 IBMDSwitcherKeyDVEParameters::GetShadow method

The **GetShadow** method gets the current shadow flag.

Syntax

```
HRESULT    GetShadow (boolean* shadow);
```

Parameters

Name	Direction	Description
shadow	out	The current shadow flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The shadow parameter is invalid.

5.2.12.2 IBMDSwitcherKeyDVEParameters::SetShadow method

The **SetShadow** method sets the shadow flag.

Syntax

```
HRESULT     SetShadow (boolean shadow);
```

Parameters

Name	Direction	Description
shadow	in	The desired shadow flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.3 IBMDSwitcherKeyDVEParameters::GetLightSourceDirection method

The **GetLightSourceDirection** method gets the current light source direction value.

Syntax

```
HRESULT     GetLightSourceDirection (double* degrees);
```

Parameters

Name	Direction	Description
degrees	out	The current light source direction in degrees.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The degrees parameter is invalid.

5.2.12.4 IBMDSwitcherKeyDVEParameters::SetLightSourceDirection method

The **SetLightSourceDirection** method sets the light source direction value.

Syntax

```
HRESULT     SetLightSourceDirection (double degrees);
```

Parameters

Name	Direction	Description
degrees	in	The desired light source direction value in degrees.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.5 IBMDSwitcherKeyDVEParameters::GetLightSourceAltitude method

The **GetLightSourceAltitude** method gets the current light source altitude value.

Syntax

```
HRESULT     GetLightSourceAltitude (double* altitude);
```

Parameters

Name	Direction	Description
altitude	out	The current light source altitude value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The altitude parameter is invalid.

5.2.12.6 IBMDSwitcherKeyDVEParameters::SetLightSourceAltitude method

The **SetLightSourceAltitude** method sets the light source altitude value.

Syntax

```
HRESULT     SetLightSourceAltitude (double altitude);
```

Parameters

Name	Direction	Description
altitude	in	The desired light source altitude value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.7 IBMDSwitcherKeyDVEParameters::GetBorderEnabled method

The **GetBorderEnabled** method gets the current border enabled flag.

Syntax

```
HRESULT     GetBorderEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current border enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

5.2.12.8 IBMDSwitcherKeyDVEParameters::SetBorderEnabled method

The **SetBorderEnabled** method sets the border enabled flag.

Syntax

```
HRESULT     SetBorderEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired border enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.9 IBMDSwitcherKeyDVEParameters::GetBorderBevel method

The **GetBorderBevel** method gets the current border bevel option.

Syntax

```
HRESULT     GetBorderBevel (BMDSwitcherBorderBevelOption* bevelOption);
```

Parameters

Name	Direction	Description
bevelOption	out	The current bevel option of **BMDSwitcherBorderBevelOption**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelOption parameter is invalid.
E_UNEXPECTED	Unexpected error occurred.

5.2.12.10 IBMDSwitcherKeyDVEParameters::SetBorderBevel method

The **SetBorderBevel** method sets the border bevel option.

Syntax

```
HRESULT     SetBorderBevel (BMDSwitcherBorderBevelOption bevelOption);
```

Parameters

Name	Direction	Description
bevelOption	in	The desired bevel option of **BMDSwitcherBorderBevelOption**.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The bevelOption parameter is invalid.
E_FAIL	Failure.

5.2.12.11 IBMDSwitcherKeyDVEParameters::GetBorderWidthIn method

The **GetBorderWidthIn** method gets the current border inner width value.

Syntax

```
HRESULT     GetBorderWidthIn (double* widthIn);
```

Parameters

Name	Direction	Description
widthIn	out	The current border inner width value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthIn parameter is invalid.

5.2.12.12 IBMDSwitcherKeyDVEParameters::SetBorderWidthIn method

The **SetBorderWidthIn** method sets the border inner width value.

Syntax

```
HRESULT     SetBorderWidthIn (double widthIn);
```

Parameters

Name	Direction	Description
widthIn	in	The desired border inner width value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.13 IBMDSwitcherKeyDVEParameters::GetBorderWidthOut method

The **GetBorderWidthOut** method gets the current border outer width value.

Syntax

```
HRESULT     GetBorderWidthOut (double* widthOut);
```

Parameters

Name	Direction	Description
widthIn	out	The current border outer width value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthOut parameter is invalid.

5.2.12.14 IBMDSwitcherKeyDVEParameters::SetBorderWidthOut method

The **SetBorderWidthOut** method sets the border outer width value.

Syntax

```
HRESULT     SetBorderWidthOut (double widthOut);
```

Parameters

Name	Direction	Description
widthIn	in	The desired border outer width value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.15 IBMDSwitcherKeyDVEParameters::GetBorderSoftnessIn method

The **GetBorderSoftnessIn** method gets the current border inner softness value.

Syntax

```
HRESULT     GetBorderSoftnessIn (double* softIn);
```

Parameters

Name	Direction	Description
softIn	out	The current border inner softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.16 IBMDSwitcherKeyDVEParameters::SetBorderSoftnessIn method

The **SetBorderSoftnessIn** method sets the border inner softness value.

Syntax

```
HRESULT     SetBorderSoftnessIn (double softIn);
```

Parameters

Name	Direction	Description
softIn	in	The desired border inner softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.17 IBMDSwitcherKeyDVEParameters::GetBorderSoftnessOut method

The **GetBorderSoftnessOut** method gets the current border outer softness value.

Syntax

```
HRESULT     GetBorderSoftnessOut (double* softOut);
```

Parameters

Name	Direction	Description
softOut	out	The current border outer softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softOut parameter is invalid.

5.2.12.18 IBMDSwitcherKeyDVEParameters::SetBorderSoftnessOut method

The **SetBorderSoftnessOut** method sets the border outer softness value.

Syntax

```
HRESULT     SetBorderSoftnessOut (double softOut);
```

Parameters

Name	Direction	Description
softOut	in	The desired border outer softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.19 IBMDSwitcherKeyDVEParameters::GetBorderBevelSoftness method

The **GetBorderBevelSoftness** method gets the current border bevel softness value.

Syntax

```
HRESULT     GetBorderBevelSoftness (double* bevelSoft);
```

Parameters

Name	Direction	Description
bevelSoft	out	The current border bevel softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelSoft parameter is invalid.

5.2.12.20 IBMDSwitcherKeyDVEParameters::SetBorderBevelSoftness method

The **SetBorderBevelSoftness** method sets the border bevel softness value.

Syntax

```
HRESULT     SetBorderBevelSoftness (double bevelSoft);
```

Parameters

Name	Direction	Description
bevelSoft	in	The desired border bevel softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.21 IBMDSwitcherKeyDVEParameters::GetBorderBevelPosition method

The **GetBorderBevelPosition** method gets the current border bevel position value.

Syntax

```
HRESULT     GetBorderBevelPosition (double* bevelPosition);
```

Parameters

Name	Direction	Description
bevelPosition	out	The current border bevel position value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelPosition parameter is invalid.

5.2.12.22 IBMDSwitcherKeyDVEParameters::SetBorderBevelPosition method

The **SetBorderBevelPosition** method sets the border bevel position value.

Syntax

```
HRESULT     SetBorderBevelPosition (double bevelPosition);
```

Parameters

Name	Direction	Description
bevelPosition	in	The desired border bevel position value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.23 IBMDSwitcherKeyDVEParameters::GetBorderOpacity method

The **GetBorderOpacity** method gets the current border opacity value.

Syntax

```
HRESULT     GetBorderOpacity (double* opacity);
```

Parameters

Name	Direction	Description
opacity	out	The current border opacity value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The opacity parameter is invalid.

5.2.12.24 IBMDSwitcherKeyDVEParameters::SetBorderOpacity method

The **SetBorderOpacity** method sets the border opacity value.

Syntax

```
HRESULT     SetBorderOpacity (double opacity);
```

Parameters

Name	Direction	Description
opacity	in	The desired border opacity value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.25 IBMDSwitcherKeyDVEParameters::GetBorderHue method

The **GetBorderHue** method gets the current border hue value.

Syntax

```
HRESULT     GetBorderHue (double* hue);
```

Parameters

Name	Direction	Description
hue	out	The current border hue value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hue parameter is invalid.

5.2.12.26 IBMDSwitcherKeyDVEParameters::SetBorderHue method

The **SetBorderHue** method sets the border hue value.

Syntax

```
HRESULT     SetBorderHue (double hue);
```

Parameters

Name	Direction	Description
hue	in	The desired border hue value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.27 IBMDSwitcherKeyDVEParameters::GetBorderSaturation method

The **GetBorderSaturation** method gets the current border saturation value.

Syntax

```
HRESULT     GetBorderSaturation (double* sat);
```

Parameters

Name	Direction	Description
sat	out	The current border saturation value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The sat parameter is invalid.

5.2.12.28 IBMDSwitcherKeyDVEParameters::SetBorderSaturation method

The **SetBorderSaturation** method sets the border saturation value.

Syntax

```
HRESULT     SetBorderSaturation (double saturation);
```

Parameters

Name	Direction	Description
saturation	in	The desired border saturation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.29 IBMDSwitcherKeyDVEParameters::GetBorderLuma method

The **GetBorderLuma** method gets the current border luminance value.

Syntax

```
HRESULT     GetBorderLuma (double* luma);
```

Parameters

Name	Direction	Description
luma	out	The current border luminance value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The luma parameter is invalid.

5.2.12.30 IBMDSwitcherKeyDVEParameters::SetBorderLuma method

The **SetBorderLuma** method sets the border luminance value.

Syntax

```
HRESULT     SetBorderLuma (double luma);
```

Parameters

Name	Direction	Description
luma	in	The desired border luminance value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.31 IBMDSwitcherKeyDVEParameters::GetMasked method

The **GetMasked** method returns whether masking is enabled or not.

Syntax

```
HRESULT     GetMasked (boolean* masked);
```

Parameters

Name	Direction	Description
masked	out	Boolean flag of whether masking is enabled.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The masked parameter is invalid.

5.2.12.32 IBMDSwitcherKeyDVEParameters::SetMasked method

Use **SetMasked** method to enable or disable masking.

Syntax

```
HRESULT     SetMasked (boolean masked);
```

Parameters

Name	Direction	Description
masked	in	The desired masked value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.33 IBMDSwitcherKeyDVEParameters::GetMaskTop method

The **GetMaskTop** method returns the current mask top value.

Syntax

```
HRESULT     GetMaskTop (double* maskTop);
```

Parameters

Name	Direction	Description
maskTop	out	The current mask top value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskTop parameter is invalid.

5.2.12.34 IBMDSwitcherKeyDVEParameters::SetMaskTop method

The **SetMaskTop** method sets the mask top value.

Syntax

```
HRESULT     SetMaskTop (double maskTop);
```

Parameters

Name	Direction	Description
maskTop	in	The desired mask top value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.35 IBMDSwitcherKeyDVEParameters::GetMaskBottom method

The **GetMaskBottom** method returns the current mask bottom value.

Syntax

```
HRESULT     GetMaskBottom (double* maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	out	The current mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskBottom parameter is invalid.

5.2.12.36 IBMDSwitcherKeyDVEParameters::SetMaskBottom method

The **SetMaskBottom** method sets the mask bottom value.

Syntax

```
HRESULT     SetMaskBottom (double maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	in	The desired mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.37 IBMDSwitcherKeyDVEParameters::GetMaskLeft method

The **GetMaskLeft** method returns the current mask left value.

Syntax

```
HRESULT     GetMaskLeft (double* maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	out	The current mask left value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskLeft parameter is invalid.

5.2.12.38 BMDSwitcherKeyDVEParameters::SetMaskLeft method

The **SetMaskLeft** method sets the mask left value.

Syntax

```
HRESULT     SetMaskLeft (double maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	in	The desired mask left value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.39 BMDSwitcherKeyDVEParameters::GetMaskRight method

The **GetMaskRight** method returns the current mask right value.

Syntax

```
HRESULT     GetMaskRight (double* maskRight);
```

Parameters

Name	Direction	Description
maskRight	out	The current mask right value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskRight parameter is invalid.

5.2.12.40 BMDSwitcherKeyDVEParameters::SetMaskRight method

The **SetMaskRight** method sets the mask right value.

Syntax

```
HRESULT     SetMaskRight (double maskRight);
```

Parameters

Name	Direction	Description
maskRight	in	The desired mask right value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.41 IBMDSwitcherKeyDVEParameters::ResetMask method

The **ResetMask** method resets the mask settings to default values.

Syntax

```
HRESULT     ResetMask (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.12.42 IBMDSwitcherKeyDVEParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyDVEParameters** object. Pass an object implementing the **IBMDSwitcherKeyDVEParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyDVEParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyDVEParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.12.43 IBMDSwitcherKeyDVEParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyDVEParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyDVEParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.13 IBMDSwitcherKeyDVEParametersCallback Interface

The **IBMDSwitcherKeyDVEParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyDVEParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyDVE Parameters	IID_IBMDSwitcherKeyDVE Parameters	An **IBMDSwitcherKeyDVEParametersCallback** object interface is installed with **IBMDSwitcherKeyDVEParameters::AddCallback**andremoved with **IBMDSwitcherKeyDVEParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.13.1 IBMDSwitcherKeyDVEParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyDVEParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyDVEParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyDVEParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14 IBMDSwitcherKeyFlyParameters Interface

The **IBMDSwitcherKeyFlyParameters** object interface is used for manipulating fly settings of a key. A luminance, chroma or pattern key can be made a “fly” key, filtering its current state through the DVE hardware. Turning off the fly setting will remove the filter and return the key to its original state. Note that most properties in this interface also take effect when the key type is set to DVE.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKey	IID_IBMDSwitcherKey	An **IBMDSwitcherKeyFlyParameters** object interface can be obtained with **IBMDSwitcherKey::QueryInterface**.

Public Member Functions	
Method	**Description**
GetFly	Get the current fly flag.
SetFly	Set the fly flag.
GetCanFly	Get the current can-fly flag.
GetRate	Get the current fly rate.
SetRate	Set the fly rate.
GetSizeX	Get the current size x value.
SetSizeX	Set the size x value.
GetSizeY	Get the current size y value.
SetSizeY	Set the size y value.
GetCanScaleUp	Gets whether the Fly Key size x and size y values can be greater than 1.0.
GetPositionX	Get the current position x value.
SetPositionX	Set the position x value.
GetPositionY	Get the current position y value.
SetPositionY	Set the position y value.
GetRotation	Get the current rotation value.
SetRotation	Set the rotation value.
GetCanRotate	Gets whether the Fly Key supports rotation.
ResetRotation	Reset rotation to default value.
ResetDVE	Reset DVE properties (size, position and rotation) to default values.
ResetDVEFull	Reset DVE properties (size, position and rotation) to full screen.
IsKeyFrameStored	Determine if a key frame has been stored.
StoreAsKeyFrame	Store current state into a key frame.
RunToKeyFrame	Run to a key frame.
IsAtKeyFrames	Determines if the current frame matches any of the stored key frames.
IsRunning	Determines if the key is currently running.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.14.1 IBMDSwitcherKeyFlyParameters::GetFly method

The **GetFly** method returns whether fly is enabled or not.

Syntax

```
HRESULT     GetFly (boolean* isFlyKey);
```

Parameters

Name	Direction	Description
isFlyKey	out	Boolean status of whether fly is enabled.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isFlyKey parameter is invalid.

5.2.14.2 IBMDSwitcherKeyFlyParameters::SetFly method

Use the **SetFly** method to enable or disable fly.

Syntax

```
HRESULT     SetFly (boolean isFlyKey);
```

Parameters

Name	Direction	Description
isFlyKey	in	The desired fly enable flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.3 IBMDSwitcherKeyFlyParameters::GetCanFly method

The **GetCanFly** method returns whether this key can enable fly or not. The DVE hardware is a shared resource; if another component is currently using the resource, it may not be available for this key.

Syntax

```
HRESULT     GetCanFly (boolean* canFly);
```

Parameters

Name	Direction	Description
canFly	out	Boolean status of the can-fly flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canFly parameter is invalid.

5.2.14.4 IBMDSwitcherKeyFlyParameters::GetRate method

The **GetRate** method gets the current fly rate value.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
frames	out	The current rate value in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

5.2.14.5 IBMDSwitcherKeyFlyParameters::SetRate method

The **SetRate** method sets the fly rate value.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	The desired rate value in frames.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The frames parameter is invalid.
E_FAIL	Failure.

5.2.14.6 IBMDSwitcherKeyFlyParameters::GetSizeX method

The **GetSizeX** method gets the current size x value. The flying size is a multiple of the original key size.

Syntax

```
HRESULT     GetSizeX (double* multiplierX);
```

Parameters

Name	Direction	Description
multiplierX	out	The current size x value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The multiplierX parameter is invalid.

5.2.14.7 IBMDSwitcherKeyFlyParameters::SetSizeX method

The **SetSizeX** method sets the size x value. The flying size is a multiple of the original key size.

Note: On some switchers the maximum size x value is 1.0. The **GetCanScaleUp** method can be used to determine whether the switcher supports Fly Key size x values greater than 1.0.

Syntax

```
HRESULT     SetSizeX (double multiplierX);
```

Parameters

Name	Direction	Description
multiplierX	in	The desired size x value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.8 IBMDSwitcherKeyFlyParameters::GetSizeY method

The **GetSizeY** method gets the current size y value. The flying size is a multiple of the original key size.

Syntax

```
HRESULT     GetSizeY (double* multiplierY);
```

Parameters

Name	Direction	Description
multiplierY	out	The current size y value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The multiplierY parameter is invalid.

5.2.14.9 IBMDSwitcherKeyFlyParameters::SetSizeY method

The **SetSizeY** method sets the size y value. The flying size is a multiple of the original key size.

Note: On some switchers the maximum size y value is 1.0. The **GetCanScaleUp** method can be used to determine whether the switcher supports Fly Key size y values greater than 1.0.

Syntax

```
HRESULT     SetSizeY (double multiplierY);
```

Parameters

Name	Direction	Description
multiplierY	in	The desired size y value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.10 IBMDSwitcherKeyFlyParameters::GetCanScaleUp method

The **GetCanScaleUp** method is used to check whether the switcher supports Fly Key size x and size y values greater than 1.0.

Syntax

```
HRESULT     GetCanScaleUp (boolean* canScaleUp);
```

Parameters

Name	Direction	Description
canScaleUp	out	A Boolean value indicating whether the switcher supports Fly Key size x and size y values greater than 1.0.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canScaleUp parameter is not a valid pointer.

5.2.14.11 IBMDSwitcherKeyFlyParameters::GetPositionX method

The **GetPositionX** method gets the current position x value. This is an offset from the original key position.

Syntax

```
HRESULT     GetPositionX (double* offsetX);
```

Parameters

Name	Direction	Description
offsetX	out	The current offset x value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The offsetX parameter is invalid.

5.2.14.12 IBMDSwitcherKeyFlyParameters::SetPositionX method

The **SetPositionX** method sets the position x value. This is an offset from the original key position.

Syntax

```
HRESULT     SetPositionX (double offsetX);
```

Parameters

Name	Direction	Description
offsetX	in	The desired position x value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.13 IBMDSwitcherKeyFlyParameters::GetPositionY method

The **GetPositionY** method gets the current position y value. This is an offset from the original key position.

Syntax

```
HRESULT     GetPositionY (double* offsetY);
```

Parameters

Name	Direction	Description
offsetY	out	The current offset y value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The offsetY parameter is invalid.

5.2.14.14 IBMDSwitcherKeyFlyParameters::SetPositionY method

The **SetPositionY** method sets the position y value. This is an offset from the original key position.

Syntax

```
HRESULT     SetPositionY (double offsetY);
```

Parameters

Name	Direction	Description
offsetY	in	The desired position y value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.15 IBMDSwitcherKeyFlyParameters::GetRotation method

The **GetRotation** method gets the current rotation value.

Syntax

```
HRESULT     GetRotation (double* degrees);
```

Parameters

Name	Direction	Description
degrees	out	The current rotation value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The degrees parameter is invalid.

5.2.14.16 IBMDSwitcherKeyFlyParameters::SetRotation method

The **SetRotation** method sets the rotation value.

Syntax

```
HRESULT     SetRotation (double degrees);
```

Parameters

Name	Direction	Description
degrees	in	The desired rotation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.17 IBMDSwitcherKeyFlyParameters::GetCanRotate method

The **GetCanRotate** method determines whether the current Fly Key supports rotation via the **SetRotation** method.

Syntax

```
HRESULT     GetCanRotate (bool* canRotate);
```

Parameters

Name	Direction	Description
canRotate	out	The rotation support of the current Fly Key.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canRotate parameter is invalid.

5.2.14.18 IBMDSwitcherKeyFlyParameters::ResetRotation method

The **ResetRotation** method resets the rotation value to its default.

Syntax

```
HRESULT     ResetRotation (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.19 IBMDSwitcherKeyFlyParameters::ResetDVE method

The **ResetDVE** method resets the DVE parameters to their default values, i.e. size, position and rotation.

Syntax

```
HRESULT     ResetDVE (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.20 IBMDSwitcherKeyFlyParameters::ResetDVEFull method

The **ResetDVEFull** method resets the key fly parameters to full screen with no rotation.

Syntax

```
HRESULT     ResetDVEFull (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.14.21 IBMDSwitcherKeyFlyParameters::IsKeyFrameStored method

The **IsKeyFrameStored** method returns whether the specified key frame has been stored or not. It is intended for use with user-defined key frames to determine if they have been stored.

Syntax

```
HRESULT     IsKeyFrameStored (BMDSwitcherFlyKeyFrame keyFrame, boolean* stored);
```

Parameters

Name	Direction	Description
keyFrame	in	Specify a single key frame of **BMDSwitcherFlyKeyFrame** to query the status on.
stored	out	The current status flag of whether the specified key frame has been stored.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The keyFrame parameter is invalid.
E_POINTER	The stored parameter is invalid.

5.2.14.22 IBMDSwitcherKeyFlyParameters::StoreAsKeyFrame method

The **StoreAsKeyFrame** method stores the current frame into the specified key frame(s). Multiple user-defined key frames can be specified.

Syntax

```
HRESULT     StoreAsKeyFrame (BMDSwitcherFlyKeyFrame keyFrames);
```

Parameters

Name	Direction	Description
keyFrames	in	Specify where to store the current frame, must be user-defined key frame(s).

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The keyFrames parameter is invalid.
E_FAIL	Failure.

5.2.14.23 IBMDSwitcherKeyFlyParameters::RunToKeyFrame method

The **RunToKeyFrame** method commences a run from current frame to the specified key frame.

Syntax

```
HRESULT     RunToKeyFrame (BMDSwitcherFlyKeyFrame destination);
```

Parameters

Name	Direction	Description
destination	in	The destination key frame.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The destination parameter is invalid.
E_FAIL	Failure.

5.2.14.24 IBMDSwitcherKeyFlyParameters::IsAtKeyFrames method

The **IsAtKeyFrames** method returns a bit set of key frames that match the current frame. Zero is returned if the current frame does not match any built-in or user-defined frames.

Syntax

```
HRESULT     IsAtKeyFrames (BMDSwitcherFlyKeyFrame* keyFrames);
```

Parameters

Name	Direction	Description
keyFrames	out	All key frames that match the current frame.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The keyFrames parameter is invalid.

5.2.14.25 IBMDSwitcherKeyFlyParameters::GetKeyFrameParameters method

The **GetKeyFrameParameters** method returns an object interface for accessing individual parameters in a key frame.

Syntax

```
HRESULT     GetKeyFrameParameters (BMDSwitcherFlyKeyFrame keyFrame,
            IBMDSwitcherKeyFlyKeyFrameParameters** keyFrameParameters);
```

Parameters

Name	Direction	Description
keyFrame	in	The desired key frame.
keyFrameParameters	out	**IBMDSwitcherKeyFlyKeyFrameParameters** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The keyFrame parameter is invalid.
E_POINTER	The keyFrameParameters parameter is invalid.

5.2.14.26 IBMDSwitcherKeyFlyParameters::IsRunning method

The **IsRunning** method returns the current run status.

Syntax

```
HRESULT     IsRunning (boolean* isRunning, BMDSwitcherFlyKeyFrame* destination);
```

Parameters

Name	Direction	Description
isRunning	out	Boolean status of whether the key is running.
destination	out	If the key is running, this is the destination of the run.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isRunning and/or destination parameter is invalid.
E_FAIL	Failure.

5.2.14.27 IBMDSwitcherKeyFlyParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyFlyParameters** object. Pass an object implementing the **IBMDSwitcherKeyFlyParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherKeyFlyParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyFlyParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.14.28 IBMDSwitcherKeyFlyParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyFlyParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyFlyParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.15 IBMDSwitcherKeyFlyParametersCallback Interface

The **IBMDSwitcherKeyFlyParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyFlyParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyFly Parameters	IID_IBMDSwitcherKeyFly Parameters	An **IBMDSwitcherKeyFlyParametersCallback** object interface is installed with **IBMDSwitcherKeyFlyParameters::AddCallback** and removed with **IBMDSwitcherKeyFlyParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.15.1 IBMDSwitcherKeyFlyParametersCallback::Notify method

The **Notify** method is called when **IBMDSwitcherKeyFlyParameters** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify (BMDSwitcherKeyFlyParametersEventType eventType,
            BMDSwitcherFlyKeyFrame keyFrame);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyFlyParametersEventType** that describes the type of event that has occurred.
keyFrame	in	This parameter is only valid when eventType is **bmdSwitcherKeyFlyParametersEventTypeIs KeyFrameStoredChanged**, it specifies the changed key frame.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16 IBMDSwitcherKeyFlyKeyFrameParametersInterface

The **IBMDSwitcherKeyFlyKeyFrameParameters** object interface provides access to individual key frame parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyFly Parameters	IID_IBMDSwitcherKeyFly Parameters	An **IBMDSwitcherKeyFlyKeyFrameParameters** object interface can be obtained from **IBMDSwitcherKeyFlyParameters::GetKeyFrameParameters**.

Public Member Functions	
Method	**Description**
GetSizeX	Get the size x value.
SetSizeX	Set the size x value.
GetSizeY	Get the size y value.
SetSizeY	Set the size y value.
GetCanScaleUp	Gets whether the Fly Key Key Frame size x and size y values can be greater than 1.0.
GetPositionX	Get the position x value.
SetPositionX	Set the position x value.
GetPositionY	Get the position y value.
SetPositionY	Set the position y value.
GetRotation	Get the rotation value.
SetRotation	Set the rotation value.
GetCanRotate	Gets whether the Fly Key Key Frame supports rotation.
GetBorderWidthOut	Get the border outer width value.
SetBorderWidthOut	Set the border outer width value.
GetBorderWidthIn	Get the border inner width value.
SetBorderWidthIn	Set the border inner width value.
GetBorderSoftnessOut	Get the border outer softness value.
SetBorderSoftnessOut	Set the border outer softness value.
GetBorderSoftnessIn	Get the border inner softness value.
SetBorderSoftnessIn	Set the border inner softness value.
GetBorderBevelSoftness	Get the border bevel softness value.
SetBorderBevelSoftness	Set the border bevel softness value.
GetBorderBevelPosition	Get the border bevel position value.
SetBorderBevelPosition	Set the border bevel position value.
GetBorderOpacity	Get the border opacity value.
SetBorderOpacity	Set the border opacity value.
GetBorderHue	Get the border hue value.
SetBorderHue	Set the border hue value.

Public Member Functions	
Method	**Description**
GetBorderSaturation	Get the border saturation value.
SetBorderSaturation	Set the border saturation value.
GetBorderLuma	Get the border luminance value.
SetBorderLuma	Set the border luminance value.
GetBorderLightSourceDirection	Get the border light source direction value.
SetBorderLightSourceDirection	Set the border light source direction value.
GetBorderLightSourceAltitude	Get the border light source altitude value.
SetBorderLightSourceAltitude	Set the border light source altitude value.
GetMaskTop	Get the mask top value.
SetMaskTop	Set the mask top value.
GetMaskBottom	Get the mask bottom value.
SetMaskBottom	Set the mask bottom value.
GetMaskLeft	Get the mask left value.
SetMaskLeft	Set the mask left value.
GetMaskRight	Get the mask right value.
SetMaskRight	Set the mask right value.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.16.1 IBMDSwitcherKeyFlyKeyFrameParameters::GetSizeX method

The **GetSizeX** method gets the size x value.

Syntax

```
HRESULT    GetSizeX (double* multiplierX);
```

Parameters

Name	Direction	Description
multiplierX	out	The current size x value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The multiplierX parameter is invalid.

5.2.16.2 IBMDSwitcherKeyFlyKeyFrameParameters::SetSizeX method

The **SetSizeX** method sets the size x value.

Note: On some switchers the maximum size x value is 1.0. The **GetCanScaleUp** method can be used to determine whether the switcher supports Fly Key Key Frame size x values greater than 1.0.

Syntax

```
HRESULT     SetSizeX (double multiplierX);
```

Parameters

Name	Direction	Description
multiplierX	in	The desired size x value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.3 IBMDSwitcherKeyFlyKeyFrameParameters::GetSizeY method

The **GetSizeY** method gets the size y value.

Syntax

```
HRESULT     GetSizeY (double* multiplierY);
```

Parameters

Name	Direction	Description
multiplierY	out	The size y value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The multiplierY parameter is invalid.

5.2.16.4 IBMDSwitcherKeyFlyKeyFrameParameters::SetSizeY method

The **SetSizeY** method sets the size y value.

Note: On some switchers the maximum size y value is 1.0. The **GetCanScaleUp** method can be used to determine whether the switcher supports Fly Key Key Frame size y values greater than 1.0.

Syntax

```
HRESULT     SetSizeY (double multiplierY);
```

Parameters

Name	Direction	Description
multiplierY	in	The desired size y value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.5 IBMDSwitcherKeyFlyKeyFrameParameters::GetCanScaleUp method

The **GetCanScaleUp** method is used to check whether the switcher supports Fly Key Key Frame size x and size y values greater than 1.0.

Syntax

```
HRESULT     GetCanScaleUp (boolean* canScaleUp);
```

Parameters

Name	Direction	Description
canScaleUp	out	A Boolean value indicating whether the switcher supports Fly Key Key Frame size x and size y values greater than 1.0.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canScaleUp parameter is not a valid pointer.

5.2.16.6 IBMDSwitcherKeyFlyKeyFrameParameters::GetPositionX method

The **GetPositionX** method gets the position x value.

Syntax

```
HRESULT     GetPositionX (double* offsetX);
```

Parameters

Name	Direction	Description
offsetX	out	The position x value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The offsetX parameter is invalid.

5.2.16.7 IBMDSwitcherKeyFlyKeyFrameParameters::SetPositionX method

The **SetPositionX** method sets the position x value.

Syntax

```
HRESULT     SetPositionX (double offsetX);
```

Parameters

Name	Direction	Description
offsetX	in	The desired position x value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.8 IBMDSwitcherKeyFlyKeyFrameParameters::GetPositionY method

The **GetPositionY** method gets the position y value.

Syntax

```
HRESULT     GetPositionY (double* offsetY);
```

Parameters

Name	Direction	Description
offsetY	out	The position y value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The offsetY parameter is invalid.

5.2.16.9 IBMDSwitcherKeyFlyKeyFrameParameters::SetPositionY method

The **SetPositionY** method sets the position y value.

Syntax

```
HRESULT     SetPositionY (double offsetY);
```

Parameters

Name	Direction	Description
offsetY	in	The desired position y value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.10 IBMDSwitcherKeyFlyKeyFrameParameters::GetRotation method

The **GetRotation** method gets the rotation value.

Syntax

```
HRESULT     GetRotation (double* degrees);
```

Parameters

Name	Direction	Description
degrees	out	The rotation value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The degrees parameter is invalid.

5.2.16.11 IBMDSwitcherKeyFlyKeyFrameParameters::SetRotation method

The **SetRotation** method sets the rotation value.

Syntax

```
HRESULT     SetRotation (double degrees);
```

Parameters

Name	Direction	Description
degrees	in	The desired rotation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.12 IBMDSwitcherKeyFlyKeyFrameParameters::GetCanRotate method

The **GetCanRotate** method determines whether the Fly Key Key Frame supports rotation via the **SetRotation** method.

Syntax

```
HRESULT     GetCanRotate (bool* canRotate);
```

Parameters

Name	Direction	Description
canRotate	out	The rotation support of the Fly Key Key Frame.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The canRotate parameter is invalid.

5.2.16.13 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderWidthOut method

The **GetBorderWidthOut** method gets the border outer width value.

Syntax

```
HRESULT     GetBorderWidthOut (double* widthOut);
```

Parameters

Name	Direction	Description
widthOut	out	The border outer width value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthOut parameter is invalid.

5.2.16.14 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderWidthOut method

The **SetBorderWidthOut** method sets the border outer width value.

Syntax

```
HRESULT     SetBorderWidthOut (double widthOut);
```

Parameters

Name	Direction	Description
widthOut	in	The desired border outer width value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.15 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderWidthIn method

The **GetBorderWidthIn** method gets the border inner width value.

Syntax

```
HRESULT     GetBorderWidthIn (double* widthIn);
```

Parameters

Name	Direction	Description
widthIn	out	The border inner width value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthIn parameter is invalid.

5.2.16.16 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderWidthIn method

The **SetBorderWidthIn** method sets the border inner width value.

Syntax

```
HRESULT     SetBorderWidthIn (double widthIn);
```

Parameters

Name	Direction	Description
widthIn	in	The desired border inner width value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.17 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderSoftnessOut method

The **GetBorderSoftnessOut** method gets the border outer softness value.

Syntax

```
HRESULT     GetBorderSoftnessOut (double* softOut);
```

Parameters

Name	Direction	Description
softOut	out	The border outer softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softOut parameter is invalid.

5.2.16.18 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderSoftnessOut method

The **SetBorderSoftnessOut** method sets the border outer softness value.

Syntax

```
HRESULT     SetBorderSoftnessOut (double softOut);
```

Parameters

Name	Direction	Description
softOut	in	The desired border outer softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.19 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderSoftnessIn method

The **GetBorderSoftnessIn** method gets the border inner softness value.

Syntax

```
HRESULT     GetBorderSoftnessIn (double* softIn);
```

Parameters

Name	Direction	Description
softIn	out	The border inner softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softIn parameter is invalid.

5.2.16.20 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderSoftnessIn method

The **SetBorderSoftnessIn** method sets the border inner softness value.

Syntax

```
HRESULT     SetBorderSoftnessIn (double softIn);
```

Parameters

Name	Direction	Description
softIn	in	The desired border inner softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.21 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderBevelSoftness method

The **GetBorderBevelSoftness** method gets the border bevel softness value.

Syntax

```
HRESULT     GetBorderBevelSoftness (double* bevelSoft);
```

Parameters

Name	Direction	Description
bevelSoft	out	The border bevel softness value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelSoft parameter is invalid.

5.2.16.22 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderBevelSoftness method

The **SetBorderBevelSoftness** method sets the border bevel softness value.

Syntax

```
HRESULT     SetBorderBevelSoftness (double bevelSoft);
```

Parameters

Name	Direction	Description
bevelSoft	in	The desired border bevel softness value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.23 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderBevelPosition method

The **GetBorderBevelPosition** method gets the border bevel position value.

Syntax

```
HRESULT     GetBorderBevelPosition (double* bevelPosition);
```

Parameters

Name	Direction	Description
bevelPosition	out	The border bevel position value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelPosition parameter is invalid.

5.2.16.24 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderBevelPosition method

The **SetBorderBevelPosition** method sets the border bevel position value.

Syntax

```
HRESULT     SetBorderBevelPosition (double bevelPosition);
```

Parameters

Name	Direction	Description
bevelPosition	in	The desired border bevel position value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.25 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderOpacity method

The **GetBorderOpacity** method gets the border opacity value.

Syntax

```
HRESULT     GetBorderOpacity (double* opacity);
```

Parameters

Name	Direction	Description
opacity	out	The border opacity value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The opacity parameter is invalid.

5.2.16.26 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderOpacity method

The **SetBorderOpacity** method sets the border opacity value.

Syntax

```
HRESULT     SetBorderOpacity (double opacity);
```

Parameters

Name	Direction	Description
opacity	in	The desired border opacity value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.27 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderHue method

The **GetBorderHue** method gets the border hue value.

Syntax

```
HRESULT     GetBorderHue (double* hue);
```

Parameters

Name	Direction	Description
hue	out	The border hue value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hue parameter is invalid.

5.2.16.28 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderHue method

The **SetBorderHue** method sets the border hue value.

Syntax

```
HRESULT     SetBorderHue (double hue);
```

Parameters

Name	Direction	Description
hue	in	The desired border hue value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.29 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderSaturation method

The **GetBorderSaturation** method gets the border saturation value.

Syntax

```
HRESULT     GetBorderSaturation (double* sat);
```

Parameters

Name	Direction	Description
sat	out	The border saturation value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The sat parameter is invalid.

5.2.16.30 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderSaturation method

The **SetBorderSaturation** method sets the border saturation value.

Syntax

```
HRESULT     SetBorderSaturation (double sat);
```

Parameters

Name	Direction	Description
sat	in	The desired border saturation value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.31 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderLuma method

The **GetBorderLuma** method gets the border luminance value.

Syntax

```
HRESULT     GetBorderLuma (double* luma);
```

Parameters

Name	Direction	Description
luma	out	The border luminance value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The luma parameter is invalid.

5.2.16.32 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderLuma method

The **SetBorderLuma** method sets the border luminance value.

Syntax

```
HRESULT     SetBorderLuma (double luma);
```

Parameters

Name	Direction	Description
luma	in	The desired border luminance value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.33 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderLightSourceDirection method

The **GetBorderLightSourceDirection** method gets the border light source direction value.

Syntax

```
HRESULT     GetBorderLightSourceDirection (double* degrees);
```

Parameters

Name	Direction	Description
degrees	out	The border light source direction in degrees.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The degrees parameter is invalid.

5.2.16.34 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderLightSourceDirection method

The **SetBorderLightSourceDirection** method sets the border light source direction value.

Syntax

```
HRESULT     SetBorderLightSourceDirection (double degrees);
```

Parameters

Name	Direction	Description
degrees	in	The desired border light source direction value in degrees.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.35 IBMDSwitcherKeyFlyKeyFrameParameters::GetBorderLightSourceAltitude method

The **GetBorderLightSourceAltitude** method gets the border light source altitude value.

Syntax

```
HRESULT     GetBorderLightSourceAltitude (double* altitude);
```

Parameters

Name	Direction	Description
altitude	out	The border light source altitude value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The altitude parameter is invalid.

5.2.16.36 IBMDSwitcherKeyFlyKeyFrameParameters::SetBorderLighSourceAltitude method

The **SetBorderLightSourceAltitude** method sets the border light source altitude value.

Syntax

```
HRESULT     SetBorderLightSourceAltitude (double altitude);
```

Parameters

Name	Direction	Description
altitude	in	The desired border light source altitude value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.37 IBMDSwitcherKeyFlyKeyFrameParameters::GetMaskTop method

The **GetMaskTop** method returns the mask top value.

Syntax

```
HRESULT     GetMaskTop (double* maskTop);
```

Parameters

Name	Direction	Description
maskTop	out	The mask top value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskTop parameter is invalid.

5.2.16.38 IBMDSwitcherKeyFlyKeyFrameParameters::SetMaskTop method

The **SetMaskTop** method sets the mask top value.

Syntax

```
HRESULT     SetMaskTop (double maskTop);
```

Parameters

Name	Direction	Description
maskTop	in	The desired mask top value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.39 IBMDSwitcherKeyFlyKeyFrameParameters::GetMaskBottom method

The **GetMaskBottom** method returns the mask bottom value.

Syntax

```
HRESULT     GetMaskBottom (double* maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	out	The mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskBottom parameter is invalid.

5.2.16.40 IBMDSwitcherKeyFlyKeyFrameParameters::SetMaskBottom method

The **SetMaskBottom** method sets the mask bottom value.

Syntax

```
HRESULT     SetMaskBottom (double maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	in	The desired mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.41 IBMDSwitcherKeyFlyKeyFrameParameters::GetMaskLeft method

The **GetMaskLeft** method returns the mask left value.

Syntax

```
HRESULT     GetMaskLeft (double* maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	out	The mask left value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskLeft parameter is invalid.

5.2.16.42 IBMDSwitcherKeyFlyKeyFrameParameters::SetMaskLeft method

The **SetMaskLeft** method sets the mask left value.

Syntax

```
HRESULT     SetMaskLeft (double maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	in	The desired mask left value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.43 IBMDSwitcherKeyFlyKeyFrameParameters::GetMaskRight method

The **GetMaskRight** method returns the mask right value.

Syntax

```
HRESULT     GetMaskRight (double* maskRight);
```

Parameters

Name	Direction	Description
maskRight	out	The mask right value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskRight parameter is invalid.

5.2.16.44 IBMDSwitcherKeyFlyKeyFrameParameters::SetMaskRight method

The **SetMaskRight** method sets the mask right value.

Syntax

```
HRESULT     SetMaskRight (double maskRight);
```

Parameters

Name	Direction	Description
maskRight	in	The desired mask right value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.16.45 IBMDSwitcherKeyFlyKeyFrameParameters::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherKeyFlyKeyFrameParameters** object. Pass an object implementing the **IBMDSwitcherKeyFlyKeyFrameParametersCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherKeyFlyKeyFrameParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyFlyKeyFrameParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.16.46 IBMDSwitcherKeyFlyKeyFrameParameters::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherKeyFlyKeyFrameParametersCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherKeyFlyKeyFrameParametersCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.17 IBMDSwitcherKeyFlyKeyFrameParametersCallback Interface

The **IBMDSwitcherKeyFlyKeyFrameParametersCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherKeyFlyKeyFrameParameters** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherKeyFly KeyFrameParameters	IID_IBMDSwitcherKeyFly KeyFrameParameters	An **IBMDSwitcherKeyFlyKeyFrameParametersCallback** object interface is installed with **IBMDSwitcherKeyFlyKeyFrameParameters::AddCallback** and removed with **IBMDSwitcherKeyFlyKeyFrameParameters::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

5.2.17.1 IBMDSwitcherKeyFlyKeyFrameParametersCallback::Notify method

The Notify method is called when **IBMDSwitcherKeyFlyKeyFrameParameters** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should b processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherKeyFlyKeyFrameParametersEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherKeyFlyKeyFrameParametersEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.18 IBMDSwitcherDownstreamKeyIterator Interface

The **IBMDSwitcherDownstreamKeyIterator** is used to enumerate the available downstream keys.

A reference to an **IBMDSwitcherDownstreamKeyIterator** object interface may be obtained from an **IBMDSwitcher** object interface using the CreateIterator method. Pass **IID_IBMDSwitcherDownstreamKeyIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** can return an **IBMDSwitcherDownstreamKeyIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherDownstreamKey** object interface.

5.2.18.1 IBMDSwitcherDownstreamKeyIterator::Next method

The Next method returns the next available **IBMDSwitcherDownstreamKey** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherDownstreamKey** downstreamKey);
```

Parameters

Name	Direction	Description
downstreamKey	out	**IBMDSwitcherDownstreamKey** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherDownstreamKey** objects available.
E_POINTER	The downstreamKey parameter is invalid.

5.2.19 IBMDSwitcherDownstreamKey Interface

The **IBMDSwitcherDownstreamKey** object interface is used for managing the settings of a downstream key.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherDownstreamKeyIterator	IID_IBMDSwitcherDownstreamKeyIterator	An **IBMDSwitcherDownstreamKey** object will be returned after a successful call to **IBMDSwitcherDownstreamKeyIterator::Next method**.

Public Member Functions	
Method	**Description**
GetInputCut	Get the current cut input source.
SetInputCut	Set the cut input source.
GetInputFill	Get the current fill input source.
SetInputFill	Set the fill input source.
GetFillInputAvailabilityMask	Get the availability mask for the fill of this input.
GetCutInputAvailabilityMask	Get the availability mask for the cut of this input.
GetTie	Get the current tie flag.
SetTie	Set the tie flag.
GetRate	Get the current rate value.
SetRate	Set the rate value.
GetOnAir	Get the current on-air flag.
SetOnAir	Set the on-air flag.
PerformAutoTransition	Perform an auto-transition.
PerformAutoTransitionInDirection	Perform an auto-transition in a particular direction.
IsTransitioning	Determines if this downstream key is transitioning.
IsAutoTransitioning	Determines if this downstream key is auto-transitioning.
IsTransitionTowardsOnAir	Determines which direction this downstream key is transitioning.
GetFramesRemaining	Get the number of frames remaining in the transition.
GetPreMultiplied	Get the current pre-multiplied flag.
SetPreMultiplied	Set the pre-multiplied flag.
GetClip	Get the current clip value.
SetClip	Set the clip value.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetInverse	Get the current inverse flag.
SetInverse	Set the inverse flag.
GetMasked	Get the current masked flag.

Public Member Functions	
Method	**Description**
SetMasked	Set the masked flag.
GetMaskTop	Get the current mask top value.
SetMaskTop	Set the mask top value.
GetMaskBottom	Get the current mask bottom value.
SetMaskBottom	Set the mask bottom value.
GetMaskLeft	Get the current mask left value.
SetMaskLeft	Set the mask left value.
GetMaskRight	Get the current mask right value.
SetMaskRight	Set the mask right value.
ResetMask	Reset mask properties to default.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

5.2.19.1 IBMDSwitcherDownstreamKey::GetInputCut method

The **GetInputCut** method returns the selected cut input source.

Syntax

```
HRESULT     GetInputCut (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	**BMDSwitcherInputId** of the selected cut input source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

5.2.19.2 IBMDSwitcherDownstreamKey::SetInputCut method

The **SetInputCut** method sets the cut input source.

Syntax

```
HRESULT     SetInputCut (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	The desired cut input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The inputId parameter is invalid.

5.2.19.3 IBMDSwitcherDownstreamKey::GetInputFill method

The **GetInputFill** method returns the selected fill input source.

Syntax

```
HRESULT     GetInputFill (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	**BMDSwitcherInputId** of the selected fill input source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

5.2.19.4 IBMDSwitcherDownstreamKey::SetInputFill method

The **SetInputFill** method sets the fill input source.

Syntax

```
HRESULT     SetInputFill (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	The desired fill input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The inputId parameter is invalid.

5.2.19.5 IBMDSwitcherDownstreamKey::GetFillInputAvailabilityMask method

The **GetFillInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for fill inputs available to this downstream key. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a fill input for this downstream key.

Syntax

```
HRESULT     GetFillInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

5.2.19.6 IBMDSwitcherDownstreamKey::GetCutInputAvailabilityMask method

The **GetCutInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for cut inputs available to this downstream key. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a cut input for this downstream key.

Syntax

```
HRESULT     GetCutInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

5.2.19.7 IBMDSwitcherDownstreamKey::GetTie method

The **GetTie** method gets the current tie flag.

Syntax

```
HRESULT     GetTie (boolean* tie);
```

Parameters

Name	Direction	Description
tie	out	Boolean tie flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The tie parameter is invalid.

5.2.19.8 IBMDSwitcherDownstreamKey::SetTie method

The **SetTie** method sets the tie flag.

Syntax

```
HRESULT     SetTie (boolean tie);
```

Parameters

Name	Direction	Description
tie	in	The desired tie flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.9 IBMDSwitcherDownstreamKey::GetRate method

The **GetRate** method gets the current rate value.

Syntax

```
HRESULT     GetRate (uint32_t* frames);
```

Parameters

Name	Direction	Description
frames	out	The current rate value in frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frames parameter is invalid.

5.2.19.10 IBMDSwitcherDownstreamKey::SetRate method

The **SetRate** method sets the rate value.

Syntax

```
HRESULT     SetRate (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	The desired rate value in frames.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The frames parameter is invalid.
E_FAIL	Failure.

5.2.19.11 IBMDSwitcherDownstreamKey::GetOnAir method

The **GetOnAir** method returns the on-air flag.

Syntax

```
HRESULT     GetOnAir (boolean* onAir);
```

Parameters

Name	Direction	Description
onAir	out	Boolean on-air flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The onAir parameter is invalid.

5.2.19.12 IBMDSwitcherDownstreamKey::SetOnAir method

The **SetOnAir** method sets the on-air flag.

Syntax

```
HRESULT     SetOnAir (boolean onAir);
```

Parameters

Name	Direction	Description
onAir	in	The desired on-air flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.13 IBMDSwitcherDownstreamKey::PerformAutoTransition method

Use the **PerformAutoTransition** method to start an auto-transition.

Syntax

```
HRESULT     PerformAutoTransition (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.14 IBMDSwitcherDownstreamKey::PerformAutoTransitionInDirection method

The **PerformAutoTransitionInDirection** method performs an auto-transition in the specified direction, either towards on-air or away from on-air.

Syntax

```
HRESULT     PerformAutoTransitionInDirection(boolean towardsOnAir)
```

Parameters

Name	Direction	Description
towardsOnAir	in	The desired direction.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.15 IBMDSwitcherDownstreamKey::IsTransitioning method

The **IsTransitioning** method returns whether this downstream key is transitioning or not.

Syntax

```
HRESULT     IsTransitioning (boolean* isTransitioning);
```

Parameters

Name	Direction	Description
isTransitioning	out	Boolean status of whether it is transitioning.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isTransitioning parameter is invalid.

5.2.19.16 IBMDSwitcherDownstreamKey::IsAutoTransitioning method

The **IsAutoTransitioning** method returns whether this downstream key is auto-transitioning or not.

Syntax

```
HRESULT     IsAutoTransitioning (boolean* isAutoTransitioning);
```

Parameters

Name	Direction	Description
isAutoTransitioning	out	Boolean status of whether it is auto-transitioning.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isAutoTransitioning parameter is invalid.

5.2.19.17 IBMDSwitcherDownstreamKey::IsTransitionTowardsOnAir method

The **IsTransitionTowardsOnAir** method returns whether this downstream key is transitioning towards or away from on-air.

Syntax

```
HRESULT     IsTransitionTowardsOnAir (boolean* isTransitionTowardsOnAir)
```

Parameters

Name	Direction	Description
isTransitionTowardsOnAir	out	Boolean status of whether it is transitioning towards on-air.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isTransitionTowardsOnAir parameter is invalid.

5.2.19.18 IBMDSwitcherDownstreamKey::GetFramesRemaining method

The **GetFramesRemaining** method gets the number of frames remaining in the transition.

Syntax

```
HRESULT     GetFramesRemaining (uint32_t* framesRemaining);
```

Parameters

Name	Direction	Description
framesRemaining	out	Number of frames remaining in the transition.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The framesRemaining parameter is invalid.

5.2.19.19 IBMDSwitcherDownstreamKey::GetPreMultiplied method

The **GetPreMultiplied** method returns the current pre-multiplied flag.

Syntax

```
HRESULT     GetPreMultiplied (boolean* preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	out	The current pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The preMultiplied parameter is invalid.

5.2.19.20 IBMDSwitcherDownstreamKey::SetPreMultiplied method

The **SetPreMultiplied** method sets the pre-multiplied flag. Note that clip, gain and inverse controls are not used when pre-multiplied flag is set to true.

Syntax

```
HRESULT     SetPreMultiplied (boolean preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	in	The desired pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.21 IBMDSwitcherDownstreamKey::GetClip method

The **GetClip** method returns the current clip value.

Syntax

```
HRESULT     GetClip (double* clip);
```

Parameters

Name	Direction	Description
clip	out	The current clip value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clip parameter is invalid.

5.2.19.22 IBMDSwitcherDownstreamKey::SetClip method

The **SetClip** method sets the clip value.

Syntax

```
HRESULT     SetClip (double clip);
```

Parameters

Name	Direction	Description
clip	in	The desired clip value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.23 IBMDSwitcherDownstreamKey::GetGain method

The **GetGain** method returns the current gain value.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

5.2.19.24 IBMDSwitcherDownstreamKey::SetGain method

The **SetGain** method sets the gain value.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.25 IBMDSwitcherDownstreamKey::GetInverse method

The **GetInverse** method returns the current inverse flag.

Syntax

```
HRESULT     GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

5.2.19.26 IBMDSwitcherDownstreamKey::SetInverse method

The **SetInverse** method sets the inverse flag.

Syntax

```
HRESULT     SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.27 IBMDSwitcherDownstreamKey::GetMasked method

The **GetMasked** method returns whether masking is enabled or not.

Syntax

```
HRESULT     GetMasked (boolean* masked);
```

Parameters

Name	Direction	Description
masked	out	Boolean flag of whether masking is enabled.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The masked parameter is invalid.

5.2.19.28 IBMDSwitcherDownstreamKey::SetMasked method

The **SetMasked** method enables or disables masking.

Syntax

```
HRESULT     SetMasked (boolean masked);
```

Parameters

Name	Direction	Description
masked	in	The desired masked value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.29 IBMDSwitcherDownstreamKey::GetMaskTop method

The **GetMaskTop** method returns the current mask top value.

Syntax

```
HRESULT     GetMaskTop (double* maskTop);
```

Parameters

Name	Direction	Description
maskTop	out	The current mask top value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskTop parameter is invalid.

5.2.19.30 IBMDSwitcherDownstreamKey::SetMaskTop method

The **SetMaskTop** method sets the mask top value.

Syntax

```
HRESULT     SetMaskTop (double maskTop);
```

Parameters

Name	Direction	Description
maskTop	in	The desired mask top value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.31 IBMDSwitcherDownstreamKey::GetMaskBottom method

The **GetMaskBottom** method returns the current mask bottom value.

Syntax

```
HRESULT     GetMaskBottom (double* maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	out	The current mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskBottom parameter is invalid.

5.2.19.32 IBMDSwitcherDownstreamKey::SetMaskBottom method

The **SetMaskBottom** method sets the mask bottom value.

Syntax

```
HRESULT     SetMaskBottom (double maskBottom);
```

Parameters

Name	Direction	Description
maskBottom	in	The desired mask bottom value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.33 IBMDSwitcherDownstreamKey::GetMaskLeft method

The **GetMaskLeft** method returns the current mask left value.

Syntax

```
HRESULT     GetMaskLeft (double* maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	out	The current mask left value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskLeft parameter is invalid.

5.2.19.34 IBMDSwitcherDownstreamKey::SetMaskLeft method

The **SetMaskLeft** method sets the mask left value.

Syntax

```
HRESULT     SetMaskLeft (double maskLeft);
```

Parameters

Name	Direction	Description
maskLeft	in	The desired mask left value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.35 IBMDSwitcherDownstreamKey::GetMaskRight method

The **GetMaskRight** method returns the current mask right value.

Syntax

```
HRESULT     GetMaskRight (double* maskRight);
```

Parameters

Name	Direction	Description
maskRight	out	The current mask right value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maskRight parameter is invalid.

5.2.19.36 IBMDSwitcherDownstreamKey::SetMaskRight method

The **SetMaskRight** method sets the mask right value.

Syntax

```
HRESULT     SetMaskRight (double maskRight);
```

Parameters

Name	Direction	Description
maskRight	in	The desired mask right value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.37 IBMDSwitcherDownstreamKey::ResetMask method

The **ResetMask** method resets mask settings to the default values.

Syntax

```
HRESULT     ResetMask (void);
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

5.2.19.38 IBMDSwitcherDownstreamKey::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherDownstreamKey** object. Pass an object implementing the **IBMDSwitcherDownstreamKeyCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherDownstreamKeyCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherDownstreamKeyCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.19.39 IBMDSwitcherDownstreamKey::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherDownstreamKeyCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherDownstreamKeyCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

5.2.20 IBMDSwitcherDownstreamKeyCallback Interface

The **IBMDSwitcherDownstreamKeyCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherDownstreamKey** object.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherDownstreamKey	IID_ IBMDSwitcherDownstreamKey	An **IBMDSwitcherDownstreamKeyCallback** object interface is installed with **IBMDSwitcherDownstreamKey::AddCallback** and removed with **IBMDSwitcherDownstreamKey::RemoveCallback**

Public Member Functions	
Method	**Description**
Next	Called when an event occurs.

5.2.20.1 IBMDSwitcherDownstreamKeyCallback::Notify

The **Notify** method is called when **IBMDSwitcherDownstreamKey** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherDownstreamKeyEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherDownstreamKeyEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 6 — SuperSource

When available in the target switcher, the SuperSource allows multiple video sources to be displayed within boxes as part of a single video output.

6.1 SuperSource Data Types

6.1.1 SuperSource Box Event Type

BMDSwitcherSuperSourceBoxEventType enumerates the possible event types for the **IBMDSwitcherSuperSourceBox** object interface.

- **bmdSwitcherSuperSourceBoxEventTypeInputSourceChanged**
  The source input changed.
- **bmdSwitcherSuperSourceBoxEventTypePositionXChanged**
  The x position changed.
- **bmdSwitcherSuperSourceBoxEventTypePositionYChanged**
  The y position changed.
- **bmdSwitcherSuperSourceBoxEventTypeSizeChanged**
  The size changed.
- **bmdSwitcherSuperSourceBoxEventTypeCroppedChanged**
  The cropped flag changed.
- **bmdSwitcherSuperSourceBoxEventTypeCropTopChanged**
  The top crop value changed.
- **bmdSwitcherSuperSourceBoxEventTypeCropBottomChanged**
  The bottom crop value changed.
- **bmdSwitcherSuperSourceBoxEventTypeCropLeftChanged**
  The left crop value changed.
- **bmdSwitcherSuperSourceBoxEventTypeCropRightChanged**
  The right crop value changed.

6.1.2 SuperSource Border Event Type

BMDSwitcherSuperSourceBorderEventType enumerates the possible event types for the **IBMDSwitcherSuperSourceBorder** object interface.

- **bmdSwitcherSuperSourceBorderEventTypeEnabledChanged**
  The border enabled flag changed.
- **bmdSwitcherSuperSourceBorderEventTypeBevelChanged**
  The border bevel changed.
- **bmdSwitcherSuperSourceBorderEventTypeWidthOutChanged**
  The border outer width changed.
- **bmdSwitcherSuperSourceBorderEventTypeWidthInChanged**
  The border inner width changed.
- **bmdSwitcherSuperSourceBorderEventTypeSoftnessOutChanged**
  The border outer softness changed.
- **bmdSwitcherSuperSourceBorderEventTypeSoftnessInChanged**
  The border inner softness changed.
- **bmdSwitcherSuperSourceBorderEventTypeBevelSoftnessChanged**
  The border bevel softness changed.

- **bmdSwitcherSuperSourceBorderEventTypeBevelPositionChanged**
  The border bevel position changed.
- **bmdSwitcherSuperSourceBorderEventTypeHueChanged**
  The border hue changed.
- **bmdSwitcherSuperSourceBorderEventTypeSaturationChanged**
  The border saturation changed.
- **bmdSwitcherSuperSourceBorderEventTypeLumaChanged**
  The border luminescence changed.
- **bmdSwitcherSuperSourceBorderEventTypeLightSourceDirectionChanged**
  The border light source direction changed.
- **bmdSwitcherSuperSourceBorderEventTypeLightSourceAltitudeChanged**
  The border light source altitude changed.

6.1.3 SuperSource Input Event Type

BMDSwitcherInputSuperSourceEventType enumerates the possible event types for the **IBMDSwitcherInputSuperSource** object interface.

- **bmdSwitcherInputSuperSourceEventTypeInputFillChanged**
  The fill input changed.
- **bmdSwitcherInputSuperSourceEventTypeInputCutChanged**
  The cut input changed.
- **bmdSwitcherInputSuperSourceEventTypeArtOptionChanged**
  The art option changed.
- **bmdSwitcherInputSuperSourceEventTypePreMultipliedChanged**
  The pre-multiplied flag changed.
- **bmdSwitcherInputSuperSourceEventTypeClipChanged**
  The clip value changed.
- **bmdSwitcherInputSuperSourceEventTypeGainChanged**
  The gain changed.
- **bmdSwitcherInputSuperSourceEventTypeInverseChanged**
  The inverse flag changed.

6.1.4 SuperSource Art Option

BMDSwitcherSuperSourceArtOption enumerates the possible supersource art options, used by the **IBMDSwitcherInputSuperSource** object interface.

- **bmdSwitcherSuperSourceArtOptionBackground**
  Places art in the background.
- **bmdSwitcherSuperSourceArtOptionForeground**
  Places art in the foreground.

6.2 Interface Reference

6.2.1 IBMDSwitcherInputSuperSource Interface

The **IBMDSwitcherInputSuperSource** object interface is used for manipulating settings specific to the SuperSource input.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInput	IID_IBMDSwitcherInput	An **IBMDSwitcherInputSuperSource** object interface can be obtained with **IBMDSwitcherInput::QueryInterface**.

Public Member Functions	
Method	**Description**
GetInputCut	Get the current art cut input.
SetInputCut	Set the art cut input.
GetInputFill	Get the current art fill input.
SetInputFill	Set the art fill input.
GetFillInputAvailabilityMask	Get the availability mask for the fill of this input.
GetCutInputAvailabilityMask	Get the availability mask for the cut of this input.
GetArtOption	Get the current art option.
SetArtOption	Set the art option.
GetPreMultiplied	Get the current art pre-multiplied flag.
SetPreMultiplied	Set the art pre-multiplied flag.
GetClip	Get the current art clip value.
SetClip	Set the art clip value.
GetGain	Get the current art gain.
SetGain	Set the art gain.
GetInverse	Get the current art inverse flag.
SetInverse	Set the art inverse flag.
SupportsBorder	Determine if the SuperSource supports the display of borders.
SetBorderLightSourceAltitude	Set the border light source altitude.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.
CreateIterator	Creates an iterator.

6.2.1.1 IBMDSwitcherInputSuperSource::GetInputCut method

The **GetInputCut** method returns the current art cut input.

Syntax

```
HRESULT     GetInputCut (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
input	out	The current cut input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

6.2.1.2 IBMDSwitcherInputSuperSource::SetInputCut method

The **SetInputCut** method sets the art cut input.

Syntax

```
HRESULT     SetInputCut (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
input	in	The desired cut input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

6.2.1.3 IBMDSwitcherInputSuperSource::GetInputFill method

The **GetInputFill** method returns the current art fill input.

Syntax

```
HRESULT     GetInputFill (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
input	out	The current fill input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

6.2.1.4 IBMDSwitcherInputSuperSource::SetInputFill method

The **SetInputFill** method sets the art fill input.

Syntax

```
HRESULT     SetInputFill (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
input	in	The desired fill input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

6.2.1.5 IBMDSwitcherInputSuperSource::GetFillInputAvailabilityMask method

The **GetFillInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for fill inputs available to this supersource input. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a fill input for this supersource.

Syntax

```
HRESULT     GetFillInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

6.2.1.6 IBMDSwitcherInputSuperSource::GetCutInputAvailabilityMask method

The **GetCutInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for cut inputs available to this supersource input. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a cut input for this supersource.

Syntax

```
HRESULT     GetCutInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask.

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter.

6.2.1.7 IBMDSwitcherInputSuperSource::GetArtOption method

The **GetArtOption** method returns the current art option.

Syntax

```
HRESULT     GetArtOption (BMDSwitcherSuperSourceArtOption* artOption);
```

Parameters

Name	Direction	Description
artOption	out	The current art option.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The artOption parameter is invalid.

6.2.1.8 IBMDSwitcherInputSuperSource::SetArtOption method

The **SetArtOption** method sets the art option.

Syntax

```
HRESULT     SetArtOption (BMDSwitcherSuperSourceArtOption artOption);
```

Parameters

Name	Direction	Description
artOption	in	The desired art option.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The artOption parameter is invalid.

6.2.1.9 IBMDSwitcherInputSuperSource::GetPreMultiplied method

The **GetPreMultiplied** method returns the current art pre-multiplied flag.

Syntax

```
HRESULT     GetPreMultiplied (boolean* preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	out	The current pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The preMultiplied parameter is invalid.

6.2.1.10 IBMDSwitcherInputSuperSource::SetPreMultiplied method

The **SetPreMultiplied** method sets the art pre-multiplied flag.

Syntax

```
HRESULT     SetPreMultiplied (boolean preMultiplied);
```

Parameters

Name	Direction	Description
preMultiplied	in	The desired pre-multiplied flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The preMultiplied parameter is invalid.

6.2.1.11 IBMDSwitcherInputSuperSource::GetClip method

The **GetClip** method returns the current art clip value.

Syntax

```
HRESULT     GetClip (double* clip);
```

Parameters

Name	Direction	Description
clip	out	The current clip value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clip parameter is invalid.

6.2.1.12 IBMDSwitcherInputSuperSource::SetClip method

The **SetClip** method sets the art clip value.

Syntax

```
HRESULT     SetClip (double clip);
```

Parameters

Name	Direction	Description
clip	in	The desired clip value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.1.13 IBMDSwitcherInputSuperSource::GetGain method

The **GetGain** method returns the current art gain.

Syntax

```
HRESULT     GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

6.2.1.14 IBMDSwitcherInputSuperSource::SetGain method

The **SetGain** method sets the art gain.

Syntax

```
HRESULT     SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.1.15 IBMDSwitcherInputSuperSource::GetInverse method

The **GetInverse** method returns the current art inverse flag.

Syntax

```
HRESULT     GetInverse (boolean* inverse);
```

Parameters

Name	Direction	Description
inverse	out	The current inverse flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inverse parameter is invalid.

6.2.1.16 IBMDSwitcherInputSuperSource::SetInverse method

The **SetInverse** method sets the art inverse flag.

Syntax

```
HRESULT     SetInverse (boolean inverse);
```

Parameters

Name	Direction	Description
inverse	in	The desired inverse flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.1.17 IBMDSwitcherInputSuperSource::SupportsBorder method

The **SupportsBorder** method is used to determine if the switcher supports the display of borders on the SuperSource.

Syntax

```
HRESULT     SupportsBorder(Boolean* supportsBorder)
```

Parameters

Name	Direction	Description
supportsBorder	out	Boolean value indicating whether borders are supported by the SuperSource.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsBorder parameter is invalid.

6.2.1.18 IBMDSwitcherInputSuperSource::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherInputSuperSource** object. Pass an object implementing the **IBMDSwitcherInputSuperSourceCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherInputSuperSourceCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputSuperSourceCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

6.2.1.19 IBMDSwitcherInputSuperSource::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherInputSuperSourceCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherInputSuperSourceCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

6.2.2 IBMDSwitcherInputSuperSourceCallback Interface

The **IBMDSwitcherInputSuperSourceCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherInputSuperSource** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInputSuperSource	IID_IBMDSwitcherInputSuperSource	An **IBMDSwitcherInputSuperSourceCallback** object interface is installed with **IBMDSwitcherInputSuperSource::AddCallback** and removedwith**IBMDSwitcherInputSuperSource::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

6.2.2.1 IBMDSwitcherInputSuperSourceCallback::Notify method

The **Notify** method is called when **IBMDSwitcherInputSuperSource** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherInputSuperSourceEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherInputSuperSourceEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.3 IBMDSwitcherSuperSourceBoxIterator Interface

The **IBMDSwitcherSuperSourceBoxIterator** is used to enumerate the available supersource boxes for a supersource input.

A reference to an **IBMDSwitcherSuperSourceBoxIterator** object interface may be obtained from an **IBMDSwitcherInputSuperSource** object interface using the **CreateIterator** method. Pass **IID_IBMDSwitcherSuperSourceBoxIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInputSuper Source	IID_IBMDSwitcherInputSuper Source	**IBMDSwitcherInputSuperSource::CreateIterator** can return an **IBMDSwitcherSuperSourceBoxIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherSuperSourceBox** object interface.

6.2.3.1 IBMDSwitcherSuperSourceBoxIterator::Next method

The **Next** method returns the next available **IBMDSwitcherSuperSourceBox** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherSuperSourceBox** box);
```

Parameters

Name	Direction	Description
box	out	**IBMDSwitcherSuperSourceBox** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherSuperSourceBox** objects available.
E_POINTER	The box parameter is invalid.

6.2.4 IBMDSwitcherSuperSourceBox Interface

The **IBMDSwitcherSuperSourceBox** object interface is used for manipulating supersource box settings.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherSuperSourceBox Iterator	IID_ IBMDSwitcherSuperSourceBox Iterator	An **IBMDSwitcherSuperSourceBox** object will be returned after a successful call to **IBMDSwitcherSuperSourceBoxIterator::Next method**.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current enabled flag.
SetEnabled	Set the enabled flag.
GetInputSource	Get the input source.
SetInputSource	Set the input source.
GetPositionX	Get the x position.
SetPositionX	Set the x position.
GetPositionY	Get the y position.
SetPositionY	Set the y position.
GetSize	Get the size.
SetSize	Set the size.
GetCropped	Get the cropped flag.
SetCropped	Set the cropped flag.
GetCropTop	Get the top crop value.
SetCropTop	Set the top crop value.
GetCropBottom	Get the bottom crop value.
SetCropBottom	Set the bottom crop value.
GetCropLeft	Get the left crop value.
SetCropLeft	Set the left crop value.
GetCropRight	Get the right crop value.
SetCropRight	Set the right crop value.
ResetCrop	Reset to default crop values.
GetInputAvailabilityMask	Get the input availability mask.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

6.2.4.1 IBMDSwitcherSuperSourceBox::GetEnabled method

The **GetEnabled** method returns the current enabled flag. Enabled supersource boxes are included in the corresponding supersource input.

Syntax

```
HRESULT     GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

6.2.4.2 IBMDSwitcherSuperSourceBox::SetEnabled method

The **SetEnabled** method sets the enabled flag. Enabled supersource boxes are included in the corresponding supersource input.

Syntax

```
HRESULT     SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.3 IBMDSwitcherSuperSourceBox::GetInputSource method

The **GetInputSource** method returns the current input source.

Syntax

```
HRESULT     GetInputSource (BMDSwitcherInputId* input);
```

Parameters

Name	Direction	Description
input	out	The current input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The input parameter is invalid.

6.2.4.4 IBMDSwitcherSuperSourceBox::SetInputSource method

The **SetInputSource** method sets the input source.

Syntax

```
HRESULT     SetInputSource (BMDSwitcherInputId input);
```

Parameters

Name	Direction	Description
input	in	The desired input source's **BMDSwitcherInputId**.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The input parameter is invalid.

6.2.4.5 IBMDSwitcherSuperSourceBox::GetPositionX method

The **GetPositionX** method returns the current x position.

Syntax

```
HRESULT     GetPositionX (double* positionX);
```

Parameters

Name	Direction	Description
positionX	out	The current x position.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The positionX parameter is invalid.

6.2.4.6 IBMDSwitcherSuperSourceBox::SetPositionX method

The **SetPositionX** method sets the x position.

Syntax

```
HRESULT     SetPositionX (double positionX);
```

Parameters

Name	Direction	Description
positionX	in	The desired x position.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.7 IBMDSwitcherSuperSourceBox::GetPositionY method

The **GetPositionY** method returns the current y position.

Syntax

```
HRESULT     GetPositionY (double* positionY);
```

Parameters

Name	Direction	Description
positionY	out	The current y position.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The positionY parameter is invalid.

6.2.4.8 IBMDSwitcherSuperSourceBox::SetPositionY method

The **SetPositionY** method sets the y position.

Syntax

```
HRESULT     SetPositionY (double positionY);
```

Parameters

Name	Direction	Description
positionY	in	The desired y position.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.9 IBMDSwitcherSuperSourceBox::GetSize method

The **GetSize** method returns the current size.

Syntax

```
HRESULT     GetSize (double* size);
```

Parameters

Name	Direction	Description
size	out	The current size.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The size parameter is invalid.

6.2.4.10 IBMDSwitcherSuperSourceBox::SetSize method

The **SetSize** method sets the size.

Syntax

```
HRESULT     SetSize (double size);
```

Parameters

Name	Direction	Description
size	in	The desired size.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.11 IBMDSwitcherSuperSourceBox::GetCropped method

The **GetCropped** method returns the current cropped flag.

Syntax

```
HRESULT     GetCropped (boolean* cropped);
```

Parameters

Name	Direction	Description
cropped	out	The current cropped flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The cropped parameter is invalid.

6.2.4.12 IBMDSwitcherSuperSourceBox::SetCropped method

The **SetCropped** method sets the cropped flag.

Syntax

```
HRESULT     SetCropped (boolean cropped);
```

Parameters

Name	Direction	Description
cropped	in	The desired cropped flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.13 IBMDSwitcherSuperSourceBox::GetCropTop method

The **GetCropTop** method returns the current top crop value.

Syntax

```
HRESULT     GetCropTop (double* top);
```

Parameters

Name	Direction	Description
top	out	The current top crop value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The top parameter is invalid.

6.2.4.14 IBMDSwitcherSuperSourceBox::SetCropTop method

The **SetCropTop** method sets the top crop value.

Syntax

```
HRESULT     SetCropTop (double top);
```

Parameters

Name	Direction	Description
top	in	The desired top crop value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.15 IBMDSwitcherSuperSourceBox::GetCropBottom method

The **GetCropBottom** method returns the current bottom crop value.

Syntax

```
HRESULT     GetCropBottom (double* bottom);
```

Parameters

Name	Direction	Description
bottom	out	The current bottom crop value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bottom parameter is invalid.

6.2.4.16 IBMDSwitcherSuperSourceBox::SetCropBottom method

The **SetCropBottom** method sets the bottom crop value.

Syntax

```
HRESULT     SetCropBottom (double bottom);
```

Parameters

Name	Direction	Description
bottom	in	The desired bottom crop value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.17 IBMDSwitcherSuperSourceBox::GetCropLeft method

The **GetCropLeft** method returns the current left crop value.

Syntax

```
HRESULT     GetCropLeft (double* left);
```

Parameters

Name	Direction	Description
left	out	The current left crop value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The left parameter is invalid.

6.2.4.18 IBMDSwitcherSuperSourceBox::SetCropLeft method

The **SetCropLeft** method sets the left crop value.

Syntax

```
HRESULT     SetCropLeft (double left);
```

Parameters

Name	Direction	Description
left	in	The desired left crop value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.19 IBMDSwitcherSuperSourceBox::GetCropRight method

The **GetCropRight** method returns the current right crop value.

Syntax

```
HRESULT     GetCropRight (double* right);
```

Parameters

Name	Direction	Description
right	out	The current right crop value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The right parameter is invalid.

6.2.4.20 IBMDSwitcherSuperSourceBox::SetCropRight method

The **SetCropRight** method sets the right crop value.

Syntax

```
HRESULT     SetCropRight (double right);
```

Parameters

Name	Direction	Description
right	in	The desired right crop value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.21 IBMDSwitcherSuperSourceBox::ResetCrop method

The **ResetCrop** method resets the crop to default values.

Syntax

```
HRESULT     ResetCrop (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.4.22 IBMDSwitcherSuperSourceBox::GetInputAvailabilityMask method

The **GetInputAvailabilityMask** method returns the corresponding **BMDSwitcherInputAvailability** bit mask value for this supersource box. The input availability property of an **IBMDSwitcherInput** can be bitwise-ANDed with this mask value. If the result of the bitwise-AND is equal to the mask value then this input is available for use as a source for this supersource box.

Syntax

```
HRESULT     GetInputAvailabilityMask (BMDSwitcherInputAvailability* mask);
```

Parameters

Name	Direction	Description
mask	out	**BMDSwitcherInputAvailability** bit mask

Return Values

Value	Description
S_OK	Success.
E_POINTER	Invalid mask parameter

6.2.4.23 IBMDSwitcherSuperSourceBox::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherSuperSourceBox** object. Pass an object implementing the **IBMDSwitcherSuperSourceBoxCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherSuperSourceBoxCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherSuperSourceBoxCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

6.2.4.24 IBMDSwitcherSuperSourceBox::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherSuperSourceBoxCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherSuperSourceBoxCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

6.2.5 IBMDSwitcherSuperSourceBoxCallback Interface

The **IBMDSwitcherSuperSourceBoxCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherSuperSourceBox** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherSuperSourceBox	IID_ IBMDSwitcherSuperSourceBox	An **IBMDSwitcherSuperSourceBoxCallback** object interface is installed with **IBMDSwitcherSuperSourceBox::AddCallback** and removed with **IBMDSwitcherSuperSourceBox::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

6.2.5.1 IBMDSwitcherSuperSourceBoxCallback::Notify method

The **Notify** method is called when **IBMDSwitcherSuperSourceBox** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherSuperSourceBoxEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherSuperSourceBoxEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6 IBMDSwitcherSuperSourceBorder Interface

The **IBMDSwitcherSuperSourceBorder** object interface is used for manipulating supersource border settings.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherInput SuperSource	IID_IBMDSwitcherInput SuperSource	An **IBMDSwitcherSuperSourceBorder** object interface can be obtained with **IBMDSwitcherInputSuperSource::QueryInterface**.

Public Member Functions	
Method	**Description**
GetBorderEnabled	Get the current border enabled flag.
SetBorderEnabled	Set the border enabled flag.
GetBorderBevel	Get the current border bevel.
SetBorderBevel	Set the border bevel.
GetBorderWidthOut	Get the current border outer width.
SetBorderWidthOut	Set the border outer width.
GetBorderWidthIn	Get the current border inner width.
SetBorderWidthIn	Set the border inner width.
GetBorderSoftnessOut	Get the current border outer softness.
SetBorderSoftnessOut	Set the border outer softness.
GetBorderSoftnessIn	Get the current border inner softness.
SetBorderSoftnessIn	Set the border inner softness.
GetBorderBevelSoftness	Get the current border bevel softness.
SetBorderBevelSoftness	Set the border bevel softness.
GetBorderBevelPosition	Get the current border bevel position.
SetBorderBevelPosition	Set the border bevel position.
GetBorderHue	Get the current border hue.
SetBorderHue	Set the border hue.
GetBorderSaturation	Get the current border saturation.
SetBorderSaturation	Set the border saturation.
GetBorderLuma	Get the current border luminescence.
SetBorderLuma	Set the border luminescence.
GetBorderLightSourceDirection	Get the current border light source direction.
SetBorderLightSourceDirection	Set the border light source direction.
GetBorderLightSourceAltitude	Get the current border light source altitude.
SetBorderLightSourceAltitude	Set the border light source altitude.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

6.2.6.1 IBMDSwitcherSuperSourceBorder::GetBorderEnabled method

The **GetBorderEnabled** method returns the current border enabled flag.

Syntax

```
HRESULT     GetBorderEnabled(Boolean* enabled)
```

Parameters

Name	Direction	Description
enabled	out	The current border enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

6.2.6.2 IBMDSwitcherSuperSourceBorder::SetBorderEnabled method

The **SetBorderEnabled** method sets the border enabled flag.

Syntax

```
HRESULT     SetBorderEnabled(Boolean enabled)
```

Parameters

Name	Direction	Description
enabled	in	The desired border enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.3 IBMDSwitcherSuperSourceBorder::GetBorderBevel method

The **GetBorderBevel** method returns the current border bevel option.

Syntax

```
HRESULT     GetBorderBevel(BMDSwitcherBorderBevelOption* bevelOption)
```

Parameters

Name	Direction	Description
bevelOption	out	The current border bevel option.

Return Values

Value	Description
S_OK	Success.
E_UNEXPECTED	Unexpected error occurred.
E_POINTER	The bevelOption parameter is invalid.

6.2.6.4 IBMDSwitcherSuperSourceBorder::SetBorderBevel method

The **SetBorderBevel** method sets the border bevel option.

Syntax

```
HRESULT     SetBorderBevel(BMDSwitcherBorderBevelOption bevelOption)
```

Parameters

Name	Direction	Description
bevelOption	in	The desired border bevel option.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The bevelOption parameter is invalid.
E_FAIL	Failure.

6.2.6.5 IBMDSwitcherSuperSourceBorder::GetBorderWidthOut method

The **GetBorderWidthOut** method returns the current border outer width.

Syntax

```
HRESULT     GetBorderWidthOut(double* widthOut)
```

Parameters

Name	Direction	Description
widthOut	out	The current border outer width.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthOut parameter is invalid.

6.2.6.7 IBMDSwitcherSuperSourceBorder::SetBorderWidthOut method

The **SetBorderWidthOut** method sets the border outer width.

Syntax

```
HRESULT     SetBorderWidthOut(double widthOut)
```

Parameters

Name	Direction	Description
widthOut	in	The desired border outer width.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.8 IBMDSwitcherSuperSourceBorder::GetBorderWidthIn method

The **GetBorderWidthIn** method returns the current border inner width.

Syntax

```
HRESULT     GetBorderWidthIn(double* widthIn)
```

Parameters

Name	Direction	Description
widthIn	out	The current border inner width.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The widthIn parameter is invalid.

6.2.6.9 IBMDSwitcherSuperSourceBorder::SetBorderWidthIn method

The **SetBorderWidthIn** method sets the border inner width.

Syntax

```
HRESULT     SetBorderWidthIn(double widthIn)
```

Parameters

Name	Direction	Description
widthIn	in	The desired border inner width.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.10 IBMDSwitcherSuperSourceBorder::GetBorderSoftnessOut method

The **GetBorderSoftnessOut** method returns the current border outer softness.

Syntax

```
HRESULT     GetBorderSoftnessOut(double* softnessOut)
```

Parameters

Name	Direction	Description
softnessOut	out	The current border outer softness.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softnessOut parameter is invalid.

6.2.6.11 IBMDSwitcherSuperSourceBorder::SetBorderSoftnessOut method

The **SetBorderSoftnessOut** method sets the border outer softness.

Syntax

```
HRESULT     SetBorderSoftnessOut(double softnessOut)
```

Parameters

Name	Direction	Description
softnessOut	in	The desired border outer softness.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.12 IBMDSwitcherSuperSourceBorder::GetBorderSoftnessIn method

The **GetBorderSoftnessIn** method returns the current border inner softness.

Syntax

```
HRESULT     GetBorderSoftnessIn(double* softnessIn)
```

Parameters

Name	Direction	Description
softnessIn	out	The current border inner softness.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The softnessIn parameter is invalid.

6.2.6.13 IBMDSwitcherSuperSourceBorder::SetBorderSoftnessIn method

The **SetBorderSoftnessIn** method sets the border inner softness.

Syntax

```
HRESULT     SetBorderSoftnessIn(double softnessIn)
```

Parameters

Name	Direction	Description
softnessIn	in	The desired border inner softness.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.14 IBMDSwitcherSuperSourceBorder::GetBorderBevelSoftness method

The **GetBorderBevelSoftness** method returns the current border bevel softness.

Syntax

```
HRESULT     GetBorderBevelSoftness(double* bevelSoftness)
```

Parameters

Name	Direction	Description
bevelSoftness	out	The current border bevel softness.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelSoftness parameter is invalid.

6.2.6.15 IBMDSwitcherSuperSourceBorder::SetBorderBevelSoftness method

The **SetBorderBevelSoftness** method sets the border bevel softness.

Syntax

```
HRESULT     SetBorderBevelSoftness(double bevelSoftness)
```

Parameters

Name	Direction	Description
bevelSoftness	in	The desired border bevel softness.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.16 IBMDSwitcherSuperSourceBorder::GetBorderBevelPosition method

The **GetBorderBevelPosition** method returns the current border bevel position.

Syntax

```
HRESULT     GetBorderBevelPosition(double* bevelPosition)
```

Parameters

Name	Direction	Description
bevelPosition	out	The current border bevel position.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The bevelPosition parameter is invalid.

6.2.6.17 IBMDSwitcherSuperSourceBorder::SetBorderBevelPosition method

The **SetBorderBevelPosition** method sets the border bevel position.

Syntax

```
HRESULT     SetBorderBevelPosition(double bevelPosition)
```

Parameters

Name	Direction	Description
bevelPosition	in	The desired border bevel position.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.18 IBMDSwitcherSuperSourceBorder::GetBorderHue method

The **GetBorderHue** method returns the current border hue.

Syntax

```
HRESULT     GetBorderHue(double* hue)
```

Parameters

Name	Direction	Description
hue	out	The current border hue.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hue parameter is invalid.

6.2.6.19 IBMDSwitcherSuperSourceBorder::SetBorderHue method

The **SetBorderHue** method sets the border hue.

Syntax

```
HRESULT     SetBorderHue(double hue)
```

Parameters

Name	Direction	Description
hue	in	The desired border hue.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.20 IBMDSwitcherSuperSourceBorder::GetBorderSaturation method

The **GetBorderSaturation** method returns the current border saturation.

Syntax

```
HRESULT     GetBorderSaturation(double* sat)
```

Parameters

Name	Direction	Description
sat	out	The current border saturation.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The sat parameter is invalid.

6.2.6.21 IBMDSwitcherSuperSourceBorder::SetBorderSaturation method

The **SetBorderSaturation** method sets the border saturation.

Syntax

```
HRESULT     SetBorderSaturation(double sat)
```

Parameters

Name	Direction	Description
sat	in	The desired border saturation.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.22 IBMDSwitcherSuperSourceBorder::GetBorderLuma method

The **GetBorderLuma** method returns the current border luminescence.

Syntax

```
HRESULT     GetBorderLuma(double* luma)
```

Parameters

Name	Direction	Description
luma	out	The current border luminescence.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The luma parameter is invalid.

6.2.6.23 IBMDSwitcherSuperSourceBorder::SetBorderLuma method

The **SetBorderLuma** method sets the border luminescence.

Syntax

```
HRESULT     SetBorderLuma(double luma)
```

Parameters

Name	Direction	Description
luma	in	The desired border luminescence.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.24 IBMDSwitcherSuperSourceBorder::GetBorderLightSourceDirection method

The **GetBorderLightSourceDirection** method returns the current border light source direction.

Syntax

```
HRESULT     GetBorderLightSourceDirection(double* degrees)
```

Parameters

Name	Direction	Description
degrees	out	The current border light source direction in degrees.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The degrees parameter is invalid.

6.2.6.25 IBMDSwitcherSuperSourceBorder::SetBorderLightSourceDirection method

The **SetBorderLightSourceDirection** method sets the border light source direction.

Syntax

```
HRESULT     SetBorderLightSourceDirection(double degrees)
```

Parameters

Name	Direction	Description
degrees	in	The desired border light source direction in degrees.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.6.26 IBMDSwitcherSuperSourceBorder::GetBorderLightSourceAltitude method

The **GetBorderLightSourceAltitude** method returns the current border light source altitude.

Syntax

```
HRESULT     GetBorderLightSourceAltitude(double* altitude)
```

Parameters

Name	Direction	Description
altitude	out	The current border light source altitude.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The altitude parameter is invalid.

6.2.6.27 IBMDSwitcherSuperSourceBorder::SetBorderLightSourceAltitude method

The **SetBorderLightSourceAltitude** method sets the border light source altitude.

Syntax

```
HRESULT     SetBorderLightSourceAltitude(double altitude)
```

Parameters

Name	Direction	Description
altitude	in	The desired border light source altitude.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

6.2.7 IBMDSwitcherSuperSourceBorderCallback Interface

The **IBMDSwitcherSuperSourceBorderCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherSuperSourceBorder** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherSuper SourceBorder	IID_IBMDSwitcherSuper SourceBorder	An **IBMDSwitcherSuperSourceBorderCallback** object interface is installed with **IBMDSwitcherSuperSourceBorder::AddCallback** and removed with **IBMDSwitcherSuperSourceBorder::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

6.2.7.1 IBMDSwitcherSuperSourceBorderCallback::Notify method

The **Notify** method is called when **IBMDSwitcherSuperSourceBorder** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT     Notify(BMDSwitcherSuperSourceBorderEventType eventType)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherSuperSourceBorderEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 7 — Audio Mixing

Every switcher allows control over how audio is to be mixed into the program output, whether it is sourced from the media players, external audio-in or embedded with the video on an input.

7.1 Original Audio Mixing Data Types

7.1.1 Original Audio Mixer Event Type

BMDSwitcherAudioMixerEventType enumerates the possible event types for the **IBMDSwitcherAudioMixerCallback** object interface.

- **bmdSwitcherAudioMixerEventTypeProgramOutGainChanged**
  The program out gain changed.
- **bmdSwitcherAudioMixerEventTypeProgramOutBalanceChanged**
  The program out balance changed.

7.1.2 Original Audio Mixer Audio Input Identifier

BMDSwitcherAudioInputId

BMDSwitcherAudioInputId is a signed 64 bit integer type and used as a unique identifier for each audio input.

7.1.3 Original Audio Mixer Audio Input Type

BMDSwitcherAudioInputType enumerates the possible input types for the **IBMDSwitcherAudioInput** object interface.

- **bmdSwitcherAudioInputTypeEmbeddedWithVideo**
  The audio is embedded into a switcher input.
- **bmdSwitcherAudioInputTypeMediaPlayer**
  The audio is from a media player.
- **bmdSwitcherAudioInputTypeAudioIn**
  The audio is from an external audio-in.

7.1.4 Original Audio Mixer Mix Option

BMDSwitcherAudioMixOption enumerates the possible mix options for the **IBMDSwitcherAudioInput** object interface.

- **bmdSwitcherAudioMixOptionOff**
  The audio is not to be mixed into anything.
- **bmdSwitcherAudioMixOptionOn**
  The audio is always mixed into the output.
- **bmdSwitcherAudioMixOptionAudioFollowVideo**
  The audio is mixed into the output when its associated video is on air.

7.1.5 Original Audio Mixer Audio Input Event Type

BMDSwitcherAudioInputEventType enumerates the possible event types for the **IBMDSwitcherAudioInputCallback** object interface.

- **bmdSwitcherAudioInputEventTypeMixOptionChanged**
  The mix option changed.
- **bmdSwitcherAudioInputEventTypeGainChanged**
  The gain changed.
- **bmdSwitcherAudioInputEventTypeBalanceChanged**
  The balance changed.
- **bmdSwitcherAudioInputEventTypeCurrentExternalPortTypeChanged**
  The audio input's external port type changed.
- **bmdSwitcherAudioInputEventTypeIsMixedInChanged**
  The is-mixed-in changed.

7.1.6 Original Audio Mixer Monitor Output Event Type

BMDSwitcherAudioMonitorOutputEventType enumerates the possible event types for the **IBMDSwitcherAudioMonitorOutputCallback** object interface.

- **bmdSwitcherAudioMonitorOutputEventTypeMonitorEnableChanged**
  The monitor enable flag changed.
- **bmdSwitcherAudioMonitorOutputEventTypeGainChanged**
  The gain changed.
- **bmdSwitcherAudioMonitorOutputEventTypeMuteChanged**
  The mute changed.
- **bmdSwitcherAudioMonitorOutputEventTypeSoloChanged**
  The solo flag changed.
- **bmdSwitcherAudioMonitorOutputEventTypeSoloInputChanged**
  The input that is soloed changed.
- **bmdSwitcherAudioMonitorOutputEventTypeDimChanged**
  The dim flag changed.
- **bmdSwitcherAudioMonitorOutputEventTypeDimLevelChanged**
  The dim level changed.

7.1.7 Original Audio Mixer Audio Headphone Output Event Type

BMDSwitcherAudioHeadphoneOutputEventType enumerates the possible event types for the **IBMDSwitcherAudioHeadphoneOutput** object interface.

- **bmdSwitcherAudioHeadphoneOutputEventTypeGainChanged**
  The gain of the headphone output has changed.
- **bmdSwitcherAudioHeadphoneOutputEventTypeInputProgramOutGainChanged**
  The gain of the program out input to the headphone output has changed.
- **bmdSwitcherAudioHeadphoneOutputEventTypeInputTalkbackGainChanged**
  The gain of the talkback input to the headphone output has changed.
- **bmdSwitcherAudioHeadphoneOutputEventTypeInputSidetoneGainChanged**
  The gain of the sidetone (microphone) input to the headphone output has changed.

7.2 Fairlight Audio Mixing Data Types

7.2.1 Fairlight Audio Mixer Event Type

BMDSwitcherFairlightAudioMixerEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioMixerCallback** object interface.

- **bmdSwitcherFairlightAudioMixerEventTypeMasterOutFaderGainChanged**
  The master out fader gain changed.
- **bmdSwitcherFairlightAudioMixerEventTypeMasterOutFollowFadeToBlackChanged**
  The master out follow fade to black changed.
- **bmdSwitcherFairlightAudioMixerEventTypeAudioFollowVideo CrossfadeTransitionChanged**
  The audio follow video crossfade transition changed.

7.2.2 Fairlight Audio Input Type

BMDSwitcherFairlightAudioInputType enumerates the possible input types for the **IBMDSwitcherFairlightAudioInput** object interface.

- **bmdSwitcherFairlightAudioInputTypeMediaPlayer**
  The audio is from a media player.
- **bmdSwitcherFairlightAudioInputTypeMediaPlayer**
  The audio is from a media player
- **bmdSwitcherFairlightAudioInputTypeMADI**
  The audio is from a MADI input.

7.2.3 Fairlight Audio Input Configuration

BMDSwitcherFairlightAudioInputConfiguration enumerates the possible input types for the **IBMDSwitcherFairlightAudioInput** object interface.

- **bmdSwitcherFairlightAudioInputConfigurationMono**
  The input configuration is mono.
- **bmdSwitcherFairlightAudioInputConfigurationStereo**
  The input configuration is stereo.
- **bmdSwitcherFairlightAudioInputConfigurationDualMono**
  The input configuration is dual mono.

7.2.4 Fairlight Audio Source Identifier

BMDSwitcherFairlightAudioSourceId.

- **BMDSwitcherFairlightAudioSourceId** is a signed 64-bit integer type and used as a unique identifier for each Fairlight audio source.

7.2.5 Fairlight Audio Source Type

BMDSwitcherFairlightAudioSourceType enumerates the possible source types for the **IBMDSwitcherFairlightAudioSource** object interface.

- **bmdSwitcherFairlightAudioSourceTypeMono**
  The source type is mono.
- **bmdSwitcherFairlightAudioSourceTypeStereo**
  The source type is stereo.

7.2.6 Fairlight Audio Mix Option

BMDSwitcherFairlightAudioMixOption enumerates the possible mix options for the **IBMDSwitcherFairlightAudioSource** object interface.

- **bmdSwitcherFairlightAudioMixOptionOff**
  The audio is not to be mixed into anything
- **bmdSwitcherFairlightAudioMixOptionOn**
  The audio is always mixed into the output.
- **bmdSwitcherFairlightAudioMixOptionAudioFollowVideo**
  The audio is mixed into the output when its associated video is on air.

7.2.7 Fairlight Audio Equalizer Band Shape

BMDSwitcherFairlightAudioEqualizerBandShape enumerates the possible band shapes for the **IBMDSwitcherFairlightAudioEqualizerBand** object interface.

- **bmdSwitcherFairlightAudioEqualizerBandShapeLowShelf**
  The band shape is low shelf.
- **bmdSwitcherFairlightAudioEqualizerBandShapeLowPass**
  The band shape is low pass.
- **bmdSwitcherFairlightAudioEqualizerBandShapeBandPass**
  The band shape is band pass.
- **bmdSwitcherFairlightAudioEqualizerBandShapeNotch**
  The band shape is notch.
- **bmdSwitcherFairlightAudioEqualizerBandShapeHighPass**
  The band shape is high pass.
- **bmdSwitcherFairlightAudioEqualizerBandShapeHighShelf**
  The band shape is high shelf.

7.2.8 Fairlight Audio Equalizer Band Frequency Range

BMDSwitcherFairlightAudioEqualizerBandFrequencyRange enumerates the possible frequency ranges for the **IBMDSwitcherFairlightAudioEqualizerBand** object interface.

- **bmdSwitcherFairlightAudioEqualizerBandFrequencyRangeLow**
  The band frequency range is low.
- **bmdSwitcherFairlightAudioEqualizerBandFrequencyRangeMidLow**
  The band frequency range is mid low.
- **bmdSwitcherFairlightAudioEqualizerBandFrequencyRangeMidHigh**
  The band frequency range is mid high.
- **bmdSwitcherFairlightAudioEqualizerBandFrequencyRangeHigh**
  The band frequency range is high.

7.2.9 Fairlight Audio Analog Input Level

BMDSwitcherFairlightAudioAnalogInputLevel enumerates the different input level settings for Fairlight analog audio inputs. This enumeration represents a bitset since an input may support multiple levels.

- **bmdSwitcherFairlightAudioAnalogInputLevelMicrophone**
  Microphone input level.
- **bmdSwitcherFairlightAudioAnalogInputLevelConsumerLine**
  Consumer line level (-10 dBV).
- **bmdSwitcherFairlightAudioAnalogInputLevelProLine**
  Professional line level (+4 dBu).

7.2.10 Fairlight Audio Analog Input Mic Power Mode

BMDSwitcherFairlightAudioAnalogInputMicPowerMode enumerates the different microphone power mode settings for Fairlight analog audio inputs. This enumeration represents a bitset since an input may support multiple power modes.

- **bmdSwitcherFairlightAudioAnalogInputMicPowerModeNoPower**
  No power supplied to mircophone.
- **bmdSwitcherFairlightAudioAnalogInputMicPowerModePlugInPower**
  Plug-in power is supplied to microphone

7.2.11 Fairlight Audio Input Event Type

BMDSwitcherFairlightAudioInputEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioInputCallback** object interface.

- **bmdSwitcherFairlightAudioInputEventTypeCurrentExternalPortTypeChanged**
  The audio input's external port type changed.
- **bmdSwitcherFairlightAudioInputEventTypeConfigurationChanged**
  The audio input's configuration changed.

7.2.12 Fairlight Audio Source Event Type

BMDSwitcherFairlightAudioSourceEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioSource** object interface.

- **bmdSwitcherFairlightAudioSourceEventTypeIsActiveChanged**
  The is active property of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeMaxDelayFramesChanged**
  The max delay frames of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeDelayFramesChanged**
  The delay frames of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeInputGainChanged**
  The input gain of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeStereoSimulationIntensityChanged**
  The stereo simulation intensity of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypePanChanged**
  The pan of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeFaderGainChanged**
  The fader gain of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeMixOptionChanged**
  The mix option of the audio source has changed.
- **bmdSwitcherFairlightAudioSourceEventTypeIsMixedInChanged**
  The mixed in of the audio source has changed.

7.2.13 Fairlight Audio Equalizer Event Type

BMDSwitcherFairlightAudioEqualizerEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioEqualizer** object interface.

- **bmdSwitcherFairlightAudioEqualizerEventTypeEnabledChanged**
  The enable state of the equalizer has changed.
- **bmdSwitcherFairlightAudioEqualizerEventTypeGainChanged**
  The gain of the equalizer has changed.

7.2.14 Fairlight Audio Equalizer Band Event Type

BMDSwitcherFairlightAudioEqualizerBandEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioEqualizerBand** object interface.

- **bmdSwitcherFairlightAudioEqualizerBandEventTypeEnabledChanged**
  The enable of the equalizer band has changed.
- **bmdSwitcherFairlightAudioEqualizerBandEventTypeShapeChanged**
  The shape of the equalizer band has changed.
- **bmdSwitcherFairlightAudioEqualizerBandEventTypeFrequencyRangeChanged**
  The frequency range of the equalizer band has changed.
- **bmdSwitcherFairlightAudioEqualizerBandEventTypeFrequencyChanged**
  The frequency of the equalizer band has changed.
- **bmdSwitcherFairlightAudioEqualizerBandEventTypeGainChanged**
  The gain of the equalizer band has changed.
- **bmdSwitcherFairlightAudioEqualizerBandEventTypeQFactorChanged**
  The Q factor of the equalizer band has changed.

7.2.15 Fairlight Audio Dynamics Event Type

BMDSwitcherFairlightAudioDynamicsProcessorEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioDynamicsProcessor** object interface.

- **bmdSwitcherFairlightAudioDynamicsProcessorEventTypeMakeupGainChanged**
  The make up gain of the dynamics processor has changed.

7.2.16 Fairlight Audio Limiter Event Type

BMDSwitcherFairlightAudioLimiterEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioLimiter** object interface.

- **bmdSwitcherFairlightAudioLimiterEventTypeEnabledChanged**
  The enable state of the limiter has changed.
- **bmdSwitcherFairlightAudioLimiterEventTypeThresholdChanged**
  The threshold of the limiter has changed.
- **bmdSwitcherFairlightAudioLimiterEventTypeAttackChanged**
  The attack of the limiter has changed.
- **bmdSwitcherFairlightAudioLimiterEventTypeHoldChanged**
  The hold of the limiter has changed.
- **bmdSwitcherFairlightAudioLimiterEventTypeReleaseChanged**
  The release of the limiter has changed.

7.2.17 Fairlight Audio Compressor Event Type

BMDSwitcherFairlightAudioCompressorEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioCompressor** object interface.

- **bmdSwitcherFairlightAudioCompressorEventTypeEnabledChanged**
  The enable of the compressor has changed.
- **bmdSwitcherFairlightAudioCompressorEventTypeThresholdChanged**
  The threshold of the compressor has changed.
- **bmdSwitcherFairlightAudioCompressorEventTypeRatioChanged**
  The ratio of the compressor has changed.
- **bmdSwitcherFairlightAudioCompressorEventTypeAttackChanged**
  The attack of the compressor has changed.
- **bmdSwitcherFairlightAudioCompressorEventTypeHoldChanged**
  The hold of the compressor has changed.
- **bmdSwitcherFairlightAudioCompressorEventTypeReleaseChanged**
  The release of the compressor has changed.

7.2.18 Fairlight Audio Expander Event Type

BMDSwitcherFairlightAudioExpanderEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioExpander** object interface.

- **bmdSwitcherFairlightAudioExpanderEventTypeEnabledChanged**
  The enable state of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeGateModeChanged**
  The gate mode of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeThresholdChanged**
  The threshold of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeRangeChanged**
  The range of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeRatioChanged**
  The ratio of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeAttackChanged**
  The attack of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeHoldChanged**
  The hold of the expander has changed.
- **bmdSwitcherFairlightAudioExpanderEventTypeReleaseChanged**
  The release of the expander has changed.

7.2.19 Fairlight Audio Headphone Output Event Type

BMDSwitcherFairlightAudioHeadphoneOutputEventType enumerates the possible event types for the **IBMDSwitcherFairlightAudioHeadphoneOutput** object interface.

- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeGainChanged**
  The gain of the headphone output has changed.
- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeInput MasterOutGainChanged**
  The gain of the master out input to the headphone output has changed.
- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeInput TalkbackGainChanged**
  The gain of the talkback input to the headphone output has changed.
- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeInput SidetoneGainChanged**
  The gain of the sidetone (microphone) input to the headphone output has changed.
- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeInputMasterOutMuteChanged**
  The mute of the master out input to the headphone output has changed.
- **bmdSwitcherFairlightAudioHeadphoneOutputEventTypeInputTalkbackMuteChanged**
  The mute of the talkback input to the headphone output has changed.

7.2.20 Fairlight Audio Solo Event Type

BMDSwitcherFairlightAudioSoloEventType enumerates the possible event types for **IBMDSwitcherFairlightAudioSoloCallback**.

- **bmdSwitcherFairlightAudioSoloEventTypeSoloChanged**
  Solo state changed.
- **bmdSwitcherFairlightAudioSoloEventTypeSoloInputChanged**
  Solo input changed.

7.2.21 Fairlight Analog Audio Input Event Type

BMDSwitcherFairlightAnalogAudioInputEventType enumerates the possible event types for **IBMDSwitcherFairlightAnalogAudioInputCallback**.

- **bmdSwitcherFairlightAnalogAudioInputEventTypeLevelChanged**
  The analog input level setting changed.
- **bmdSwitcherFairlightAnalogAudioInputEventTypePowerModeChanged**
  The analog input power mode setting changed.

7.3 Talkback Data Types

7.3.1 Switcher Talkback Event Type

BMDSwitcherTalkbackEventType enumerates the possible event types for the **IBMDSwitcherTalkbackCallback** object interface.

- **bmdSwitcherTalkbackEventTypeMuteSDIChanged**
  The mute state of the talkback input SDI channels has changed.
- **bmdSwitcherTalkbackEventTypeInputMuteSDIChanged**
  The mute state of a talkback input SDI channel has changed.
- **bmdSwitcherTalkbackEventTypeCurrentInputSupportsMuteSDIChanged**
  The input port has changed from/to an SDI port to/from a non-SDI port. As talkback is carried via SDI, the talkback mute setting has no effect when the input is on a non-SDI port.

7.3.2 Switcher Talkback ID Type

BMDSwitcherTalkbackId enumerates the possible talkback ID types for the **IBMDSwitcherTalkback** object interface.

- **bmdSwitcherTalkbackIdProduction**
  The talkback ID is a production talkback ID.
- **bmdSwitcherTalkbackIdEngineering**
  The talkback ID is an engineering talkback ID.

7.4 Original Audio Mixing Interface Reference

7.4.1 IBMDSwitcherAudioMixer Interface

The **IBMDSwitcherAudioMixer** object interface is the root object for all original audio mixing control and feedback.

A reference to an **IBMDSwitcherAudioMixer** object interface may be obtained from an **IBMDSwitcher** object interface using the **QueryInterface** method. Pass **IID_IBMDSwitcherAudioMixer** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::QueryInterface** can return an **IBMDSwitcherAudioMixer** object interface.

Public Member Functions	
Method	**Description**
GetProgramOutGain	Get the current program out gain value.
SetProgramOutGain	Set the program out gain value.
GetProgramOutBalance	Get the current program out balance value.
SetProgramOutBalance	Set the program out balance value.
GetProgramOutFollowFadeToBlack	Get the current program out follow fade to black state.
SetProgramOutFollowFadeToBlack	Set the current program out follow fade to black state.
GetAudioFollowVideoCrossfadeTransition	Get the current audio follow video crossfade transition state.
SetAudioFollowVideoCrossfadeTransition	Set the audio follow video crossfade transition state.
SetAllLevelNotificationsEnable	Opt-in to level notifications.
ResetProgramOutLevelNotificationPeaks	Reset program out peak level statistics to zero.
ResetAllLevelNotificationPeaks	Reset all switcher peak level statistics to zero.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.
CreateIterator	Create an iterator.

7.4.1.1 IBMDSwitcherAudioMixer::GetProgramOutGain method

The **GetProgramOutGain** method returns the current gain value.

Syntax

```
HRESULT    GetProgramOutGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.4.1.2 IBMDSwitcherAudioMixer::SetProgramOutGain method

The **SetProgramOutGain** method sets the gain to apply to the program out.

Syntax

```
HRESULT    SetProgramOutGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.3 IBMDSwitcherAudioMixer::GetProgramOutBalance method

The **GetProgramOutBalance** method returns the current balance value.

Syntax

```
HRESULT    GetProgramOutBalance (double* balance);
```

Parameters

Name	Direction	Description
balance	out	The current balance value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The balance parameter is invalid.

7.4.1.4 IBMDSwitcherAudioMixer::GetProgramOutFollowFadeToBlack method

The **GetProgramOutFollowFadeToBlack** method returns the current follow fade to black state. When enabled the program out audio will fade in unity with a fade to black transition.

Syntax

```
HRESULT    GetProgramOutFollowFadeToBlack (boolean* follow)
```

Parameters

Name	Direction	Description
follow	out	The current follow fade to black state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The balance parameter is invalid.

7.4.1.5 IBMDSwitcherAudioMixer::SetProgramOutFollowFadeToBlack method

The **SetProgramOutFollowFadeToBlack** method sets the current follow fade to black state. When enabled the program out audio will fade in unity with a fade to black transition.

Syntax

```
HRESULT    SetProgramOutFollowFadeToBlack (boolean follow)
```

Parameters

Name	Direction	Description
follow	in	The desired follow fade to black state.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

7.4.1.6 IBMDSwitcherAudioMixer::SetProgramOutBalance method

The **SetProgramOutBalance** method sets the balance to apply to the program out.

Syntax

```
HRESULT    SetProgramOutBalance (double balance);
```

Parameters

Name	Direction	Description
balance	in	The desired balance value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.7 IBMDSwitcherAudioMixer::GetAudioFollowVideoCrossfadeTransition

The **GetAudioFollowVideoCrossfadeTransition** method returns the current follow video with crossfade transition state. When enabled the audio will crossfade with the video.

Syntax

```
HRESULT     GetAudioFollowVideoCrossfadeTransition (Boolean* transition)
```

Parameters

Name	Direction	Description
transition	out	The current follow video with crossfade transition state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The transition parameter is invalid.

7.4.1.8 IBMDSwitcherAudioMixer::SetAudioFollowVideoCrossfadeTransition

The **SetAudioFollowVideoCrossfadeTransition** method sets the current follow video with crossfade transition state. When enabled the audio will crossfade with the video.

Syntax

```
HRESULT     SetAudioFollowVideoCrossfadeTransition (Boolean transition)
```

Parameters

Name	Direction	Description
transition	in	The desired follow video with crossfade transition state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.9 IBMDSwitcherAudioMixer::SetAllLevelNotificationsEnable method

The **SetAllLevelNotificationsEnable** method enables level statistics for the relevant mixer inputs and outputs. Receiving level notifications are an opt-in subscription, affecting the callbacks **IBMDSwitcherAudioMixerCallback::ProgramOutLevelNotification**, **IBMDSwitcherAudioInputCallback::LevelNotification** and **IBMDSwitcherAudioMonitorOutputCallback::LevelNotification**.

Syntax

```
HRESULT    SetAllLevelNotificationsEnable (boolean enable);
```

Parameters

Name	Direction	Description
enable	in	Whether to enable notifications.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.10 IBMDSwitcherAudioMixer::ResetProgramOutLevelNotificationPeaks method

The **ResetLevelNotificationPeaks** method resets's the switcher's program out peak level statistics to zero.

Syntax

```
HRESULT    ResetProgramOutLevelNotificationPeaks (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.11 IBMDSwitcherAudioMixer::ResetAllLevelNotificationPeaks method

The **ResetAllLevelNotificationPeaks** method resets peak statistics to zero for all original audio mixer inputs and outputs.

Syntax

```
HRESULT     ResetAllLevelNotificationPeaks (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.1.12 IBMDSwitcherAudioMixer::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherAudioMixer** object. Pass an object implementing the **IBMDSwitcherAudioMixerCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherAudioMixerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioMixerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.1.13 IBMDSwitcherAudioMixer::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherAudioMixerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioMixerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.1.14 IBMDSwitcherAudioMixer::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID, such as **IBMDSwitcherAudioInputIterator** and **IBMDSwitcherAudioMonitorOutputIterator**.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	in	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

7.4.2 IBMDSwitcherAudioMixerCallback Interface

The **IBMDSwitcherAudioMixerCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherAudioMixer** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMixer	IID_IBMDSwitcherAudioMixer	An **IBMDSwitcherAudioMixerCallback** object interface is installed with **IBMDSwitcherAudioMixer::AddCallback** and removed with **IBMDSwitcherAudioMixer::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
ProgramOutLevelNotification	Reports level statistics.

7.4.2.1 IBMDSwitcherAudioMixerCallback::Notify method

The **Notify** method is called when **IBMDSwitcherAudioMixer** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherAudioMixerEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherAudioMixerEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.2.2 IBMDSwitcherAudioMixerCallback::ProgramOutLevelNotification method

The **ProgramOutLevelNotification** method is called periodically to report the current dB levels and the last known peak levels. These peak levels can be reset using **IBMDSwitcherAudioMixer**::**ResetProgramOutLevelNotificationPeaks**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherAudioMixer**::**SetAllLevelNotificationsEnable**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    ProgramOutLevelNotification (double left, double right, peakRight);
```

Parameters

Name	Direction	Description
left	in	The current dB level of the left channel.
right	in	The current dB level of the right channel.
peakLeft	in	The highest encountered peak dB level of the left channel since the last reset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.3 IBMDSwitcherAudioInputIterator Interface

The **IBMDSwitcherAudioInputIterator** is used to enumerate the available inputs for the original audio mixer.

A reference to an **IBMDSwitcherAudioInputIterator** object interface may be obtained from an **IBMDSwitcherAudioMixer** object interface using the CreateIterator method. Pass **IID_IBMDSwitcherAudioInputIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMixer	IID_IBMDSwitcherAudioMixer	**IBMDSwitcherAudioMixer::CreateIterator** can return an **IBMDSwitcherAudioInputIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherAudioInput** object interface.
GetById	Returns a pointer to an **IBMDSwitcherAudioInput** object interface, given its **BMDSwitcherAudioInputId.**

7.4.3.1 IBMDSwitcherAudioInputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherAudioInput** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherAudioInput* audioInput);
```

Parameters

Name	Direction	Description
audioInput	out	**IBMDSwitcherAudioInput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherAudioInput** objects available.
E_POINTER	The audioInput parameter is invalid.

7.4.3.2 IBMDSwitcherAudioInputIterator::GetById method

The **GetById** method returns a pointer to an **IBMDSwitcherAudioInput** object interface, given its **BMDSwitcherAudioInputId**.

Syntax

```
HRESULT    GetById (BMDSwitcherAudioInputId audioInputId, IBMDSwitcherAudioInput*
           audioInput);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
audioInput	out	**IBMDSwitcherAudioInput** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId is not a valid identifier.
E_POINTER	The audioInput parameter is invalid.

7.4.4 IBMDSwitcherAudioInput Interface

The **IBMDSwitcherAudioInput** object interface is used for manipulating the settings of an original audio mixer audio input.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioInput Iterator	IID_IBMDSwitcherAudioInput Iterator	An **IBMDSwitcherAudioInput** object interface will be returned after a successful call to **IBMDSwitcherAudioInputIterator::Next method**.

Public Member Functions	
Method	**Description**
GetType	Get the audio input type.
GetCurrentExternalPortType	Get the current physical external port type of the audio input.
GetMixOption	Get the current mix option.
SetMixOption	Set the mix option.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetBalance	Get the current balance value.
SetBalance	Set the balance value.
IsMixedIn	Get the current is-mixed-in flag.
GetAudioInputId	Returns the ID of this **IBMDSwitcherAudioInput** interface.
ResetLevelNotificationPeaks	Reset peak level statistics to zero.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.4.4.1 IBMDSwitcherAudioInput::GetType method

The **GetType** method returns the type of the original audio mixer audio input.

Syntax

```
HRESULT    GetType (BMDSwitcherAudioInputType* type);
```

Parameters

Name	Direction	Description
type	out	The audio input type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The type parameter is invalid.

7.4.4.2 IBMDSwitcherAudioInput::GetCurrentExternalPortType method

The **GetCurrentExternalPortType** method gets the current physical external port type of the original audio mixer audio input. This may change if the physical input is switchable, generating the event **bmdSwitcherAudioInputEventTypeCurrentExternalPort TypeChanged**.

Syntax

```
HRESULT    GetCurrentExternalPortType (BMDSwitcherExternalPortType* type);
```

Parameters

Name	Direction	Description
type	out	The current external port type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The type parameter is invalid.

7.4.4.3 IBMDSwitcherAudioInput::GetMixOption method

The **GetMixOption** method returns the mix option of the original audio mixer audio input.

Syntax

```
HRESULT    GetMixOption (BMDSwitcherAudioMixOption* mixOption);
```

Parameters

Name	Direction	Description
mixOption	out	The audio input mix option.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The mixOption parameter is invalid.

7.4.4.4 IBMDSwitcherAudioInput::SetMixOption method

The **SetMixOption** method sets the mix option of the original audio mixer audio input.

Syntax

```
HRESULT    SetMixOption (BMDSwitcherAudioMixOption mixOption);
```

Parameters

Name	Direction	Description
mixOption	in	The audio input mix option.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The mixOption parameter is invalid.

7.4.4.5 IBMDSwitcherAudioInput::GetGain method

The **GetGain** method returns the gain currently applied to the original audio mixer audio input.

Syntax

```
HRESULT    GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The gain currently applied to the audio input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.4.4.6 IBMDSwitcherAudioInput::SetGain method

The **SetGain** method sets the gain to apply to the original audio mixer audio input.

Syntax

```
HRESULT    SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The gain to apply to the audio input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.4.7 IBMDSwitcherAudioInput::GetBalance method

The **GetBalance** method returns the current balance for the original audio mixer audio input.

Syntax

```
HRESULT    GetBalance (double* balance);
```

Parameters

Name	Direction	Description
balance	out	The current balance.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The balance parameter is invalid.

7.4.4.8 IBMDSwitcherAudioInput::SetBalance method

The **SetBalance** method sets the balance to apply to the original audio mixer audio input.

Syntax

```
HRESULT    SetBalance (double balance);
```

Parameters

Name	Direction	Description
balance	in	The balance to apply.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The balance parameter is invalid.

7.4.4.9 IBMDSwitcherAudioInput::IsMixedIn method

The **IsMixedIn** method indicates whether the original audio mixer audio input is currently being mixed into the program out.

Syntax

```
HRESULT    IsMixedIn (boolean* mixedIn);
```

Parameters

Name	Direction	Description
mixedIn	out	The current mixed-in flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The mixedIn parameter is invalid.

7.4.4.10 IBMDSwitcherAudioInput::GetAudioInputId method

The **GetAudioInputId** method returns the **BMDSwitcherAudioInputId** of the original audio mixer audio input.

Syntax

```
HRESULT    GetAudioInputId (BMDSwitcherAudioInputId* audioInputId);
```

Parameters

Name	Direction	Description
audioInputId	out	The **BMDSwitcherAudioInputId** of the audio input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.4.11 IBMDSwitcherAudioInput::ResetLevelNotificationPeaks method

The **ResetLevelNotificationPeaks** method resets the switcher's input peak level statistics for the original audio mixer audio input to zero.

Syntax

```
HRESULT    ResetLevelNotificationPeaks (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.4.12 IBMDSwitcherAudioInput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherAudioInput** object. Pass an object implementing the **IBMDSwitcherAudioInputCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherAudioInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioInputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.4.13 IBMDSwitcherAudioInput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherAudioInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioInputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.5 IBMDSwitcherAudioInputCallback Interface

The **IBMDSwitcherAudioInputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherAudioInput** object.
Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioInput	IID_IBMDSwitcherAudioInput	An **IBMDSwitcherAudioInputCallback** bject interface is installed with **IBMDSwitcherAudioInput::AddCallback** and removed with **IBMDSwitcherAudioInput::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
LevelNotification	Reports level statistics.

7.4.5.1 IBMDSwitcherAudioInputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherAudioInput** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherAudioInputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherAudioInputEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.5.2 IBMDSwitcherAudioInputCallback::LevelNotification method

The **LevelNotification** method is called periodically to report the current dB levels and the last known peak levels for the original audio mixer audio input. These peak levels can be reset using**IBMDSwitcherAudioInput::ResetLevelNotificationPeaks**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherAudioMixer::SetAllLevelNotificationsEnable**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    LevelNotification (double left, double right,
           double peakLeft, double peakRight);
```

Parameters

Name	Direction	Description
left	in	The current dB level of the left channel.
right	in	The current dB level of the right channel.
peakLeft	in	The highest encountered peak dB level of the left channel since the last reset.
peakRight	in	The highest encountered peak dB level of the right channel since the last reset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.6 IBMDSwitcherAudioInputXLR Interface

The IBMDSwitcherAudioInputXLR object interface is used for manipulating the original audio mixer XLR input settings.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioInput	IID_IBMDSwitcherAudioInput	**IBMDSwitcherAudioInput::QueryInterface** can return an **IBMDSwitcherAudioInputXLR** object interface.

Public Member Functions	
Method	**Description**
HasRCAToXLR	Determine if the input has the capability of converting the input level from RCA to XLR.
GetRCAToXLREnabled	Query the RCA to XLR state of the XLR input.
SetRCAToXLREnabled	Set the RCA to XLR state of the XLR input.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.4.6.1 IBMDSwitcherAudioInputXLR::HasRCAToXLR method

The **HasRCAToXLR** method is used to check if the switcher input has the capability to convert the input level from RCA to XLR.

Syntax

```
HRESULT    HasRCAToXLR (boolean* hasRcaToXlr);
```

Parameters

Name	Direction	Description
hasRcaToXlr	out	A Boolean value indicating whether the switcher input has the capability to convert the input level from RCA to XLR.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hasRcaToXlr parameter is not a valid pointer.

7.4.6.2 IBMDSwitcherAudioInputXLR::GetRCAToXLREnabled method

The **GetRCAToXLREnabled** method returns the RCA to XLR enabled state of the original audio mixer audio input.

Syntax

```
HRESULT    GetRCAToXLREnabled (boolean* rcaToXlrEnabled);
```

Parameters

Name	Direction	Description
rcaToXlrEnabled	out	The RCA to XLR state of the audio input

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The rcaToXlrEnabled parameter is invalid.

7.4.6.3 IBMDSwitcherAudioInputXLR::SetRCAToXLREnabled method

The **SetRCAToXLREnabled** method sets the RCA to XLR enabled state of the original audio mixer audio input.

Syntax

```
HRESULT    SetRCAToXLREnabled (boolean rcaToXlrEnabled);
```

Parameters

Name	Direction	Description
rcaToXlrEnabled	in	The RCA to XLR state of the audio input

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.6.4 IBMDSwitcherAudioInputXLR::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherAudioInputXLR** object. Pass an object implementing the **IBMDSwitcherAudioInputXLRCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherAudioInputXLRCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioInputXLRCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.6.5 IBMDSwitcherAudioInputXLR::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherAudioInputXLRCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioInputXLRCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.7 IBMDSwitcherAudioInputXLRCallback Interface

The **IBMDSwitcherAudioInputXLRCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherAudioInputXLR** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioInputXLR	IID_ IBMDSwitcherAudioInputXLR	An **IBMDSwitcherAudioInputXLRCallback** object interface is installed with **IBMDSwitcherAudioInputXLR::AddCallback** and removed with **IBMDSwitcherAudioInputXLR::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.4.7.1 IBMDSwitcherAudioInputXLRCallback::Notify method

The **Notify** method is called when **IBMDSwitcherAudioInputXLR** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherAudioInputXLREventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherAudioInputXLREventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.8 IBMDSwitcherAudioMonitorOutputIterator Interface

The **IBMDSwitcherAudioMonitorOutputIterator** is used to enumerate the available monitor outputs for the original audio mixer.

A reference to an **IBMDSwitcherAudioMonitorOutputIterator** object interface may be obtained from an **IBMDSwitcherAudioMixer** object interface using the **CreateIterator** method.
Pass **IID_IBMDSwitcherAudioMonitorOutputIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMixer	IID_IBMDSwitcherAudioMixer	**IBMDSwitcherAudioMixer::CreateIterator** can return an **IBMDSwitcherAudioMonitorOutputIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherAudioMonitorOutputIterator** object interface.

7.4.8.1 IBMDSwitcherAudioMonitorOutputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherAudioMonitorOutput** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherAudioMonitorOutput* audioMonitorOutput);
```

Parameters

Name	Direction	Description
audioMonitorOutput	out	**IBMDSwitcherAudioMonitorOutput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherAudioMonitorOutput** objects available.
E_POINTER	The audioMonitorOutput parameter is invalid.

7.4.9 IBMDSwitcherAudioMonitorOutput Interface

The **IBMDSwitcherAudioMonitorOutput** object interface is used for manipulating parameters specific to audio monitor outputs for the original audio mixer.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMonitorOutput Iterator	IID_IBMDSwitcherAudio MonitorOutput	An **IBMDSwitcherAudioMonitorOutput** interface can be obtained with **IBMDSwitcherAudioMonitorOutputIterator::Next**.

Public Member Functions	
Method	**Description**
GetMonitorEnable	Get the current monitor-enable flag.
SetMonitorEnable	Set the monitor-enable flag.
GetMute	Get the current mute flag.
SetMute	Set the mute flag.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetSolo	Get the current solo flag.
SetSolo	Set the solo flag.
GetSoloInput	Get the current soloed input.
SetSoloInput	Set the soloed input.
GetDim	Get the current dim flag.
SetDim	Set the dim flag.
GetDimLevel	Get the current dim level.
SetDimLevel	Set the dim level.
ResetLevelNotificationPeaks	Reset peak level statistics to zero.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.4.9.1 IBMDSwitcherAudioMonitorOutput::GetMonitorEnable method

The **GetMonitorEnable** method returns the current monitor enable flag.

Syntax

```
HRESULT    GetMonitorEnable (boolean* enable);
```

Parameters

Name	Direction	Description
enable	out	The current monitor enable flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enable parameter is invalid.

7.4.9.2 IBMDSwitcherAudioMonitorOutput::SetMonitorEnable method

The **SetMonitorEnable** method sets the monitor enable flag. This output acts as a monitor when the flag is set, otherwise it mirrors the content of program out.

Syntax

```
HRESULT    SetMonitorEnable (boolean enable);
```

Parameters

Name	Direction	Description
enable	in	The current monitor enable flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.3 IBMDSwitcherAudioMonitorOutput::GetMute method

The **GetMute** method returns the current mute flag.

Syntax

```
HRESULT    GetMute (boolean* mute);
```

Parameters

Name	Direction	Description
mute	out	The current mute flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The mute parameter is invalid.

7.4.9.4 IBMDSwitcherAudioMonitorOutput::SetMute method

The **SetMute** method sets the mute flag.

Syntax

```
HRESULT    SetMute (boolean mute);
```

Parameters

Name	Direction	Description
mute	in	The desired mute flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.5 IBMDSwitcherAudioMonitorOutput::GetGain method

The **GetGain** method returns the current gain value.

Syntax

```
HRESULT    GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.4.9.6 IBMDSwitcherAudioMonitorOutput::SetGain method

The **SetGain** method sets the gain to apply to the audio monitor output.

Syntax

```
HRESULT    SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.7 IBMDSwitcherAudioMonitorOutput::GetSolo method

The **GetSolo** method returns the current solo flag.

Syntax

```
HRESULT    GetSolo (boolean* solo);
```

Parameters

Name	Direction	Description
solo	out	The current solo flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The solo parameter is invalid.

7.4.9.8 IBMDSwitcherAudioMonitorOutput::SetSolo method

The **SetSolo** method sets the solo flag.

Syntax

```
HRESULT    SetSolo (boolean solo);
```

Parameters

Name	Direction	Description
solo	in	The desired solo flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.9 IBMDSwitcherAudioMonitorOutput::GetSoloInput method

The **GetSoloInput** method returns which audio input is selected for soloing in the monitor output.

Syntax

```
HRESULT    GetSoloInput (BMDSwitcherAudioInputId* audioInput);
```

Parameters

Name	Direction	Description
audioInput	out	The audio input for soloing.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The audioInput parameter is invalid.

7.4.9.10 IBMDSwitcherAudioMonitorOutput::SetSoloInput method

The **SetSoloInput** method selects which audio input is soloed in the monitor output.

Syntax

```
HRESULT    SetSoloInput (BMDSwitcherAudioInputId audioInput);
```

Parameters

Name	Direction	Description
audioInput	in	The audio input for soloing.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The audioInput parameter is invalid.

7.4.9.11 IBMDSwitcherAudioMonitorOutput::GetDim method

The **GetDim** method returns the current dim flag.

Syntax

```
HRESULT    GetDim (boolean* dim);
```

Parameters

Name	Direction	Description
dim	out	The current dim flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The dim parameter is invalid.

7.4.9.12 IBMDSwitcherAudioMonitorOutput::SetDim method

The **SetDim** method sets the dim flag.

Syntax

```
HRESULT    SetDim (boolean dim);
```

Parameters

Name	Direction	Description
dim	in	The desired dim flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.13 IBMDSwitcherAudioMonitorOutput::GetDimLevel method

The **GetDimLevel** method returns the current dim level in dB for the original audio mixer.

Syntax

```
HRESULT    GetDimLevel (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current dim level.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.4.9.14 IBMDSwitcherAudioMonitorOutput::SetDimLevel method

The **SetDimLevel** method sets the dim level in dB.

Syntax

```
HRESULT     SetDimLevel (double gain);
```

Parameters

Name	Direction	Description
dim	in	The desired dim level.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.15 IBMDSwitcherAudioMonitorOutput::ResetLevelNotificationPeaks method

The **ResetLevelNotificationPeaks** method resets the switcher's output peak level statistics to zero.

Syntax

```
HRESULT     ResetLevelNotificationPeaks (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.9.16 IBMDSwitcherAudioMonitorOutput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherAudioMonitorOutput** object. Pass an object implementing the **IBMDSwitcherAudioMonitorOutputCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherAudioMonitorOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioMonitorOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.9.17 IBMDSwitcherAudioMonitorOutput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherAudioMonitorOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioMonitorOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.10 IBMDSwitcherAudioMonitorOutputCallback Interface

The **IBMDSwitcherAudioMonitorOutputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherAudioMonitorOutput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMonitor Output	IID_ IBMDSwitcherAudioMonitor Output	An **IBMDSwitcherAudioMonitorOutputCallback** object interface is installed with **IBMDSwitcherAudioMonitorOutput::AddCallback** and removed with **IBMDSwitcherAudioMonitorOutput::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
LevelNotification	Reports level statistics.

7.4.10.1 IBMDSwitcherAudioMonitorOutputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherAudioMonitorOutput** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherAudioMonitorOutputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherAudioMonitorOutputEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.10.2 IBMDSwitcherAudioMonitorOutputCallback::LevelNotification method

The **LevelNotification** method is called periodically to report the current dB levels and the last known peak levels. These peak levels can be reset using **IBMDSwitcherAudioMonitorOutput::ResetLevelNotificationPeaks**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherAudioMixer::SetAllLevelNotificationsEnable**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    LevelNotification (double left, double right, double peakLeft,
           double peakRight);
```

Parameters

Name	Direction	Description
left	in	The current dB level of the left channel.
right	in	The current dB level of the right channel.
peakLeft	in	The highest encountered peak dB level of the left channel since the last reset.
peakRight	in	The highest encountered peak dB level of the right channel since the last reset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.11 IBMDSwitcherAudioHeadphoneOutputIterator Interface

The **IBMDSwitcherAudioHeadphoneOutputIterator** is used to enumerate the available headphone outputs for the original audio mixer.

A reference to an **IBMDSwitcherAudioHeadphoneOutputIterator** object interface may be obtained from an **IBMDSwitcherAudioMixer** object interface using the CreateIterator method.
Pass **IID_IBMDSwitcherAudioHeadphoneOutputIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioMixer	IID_IBMDSwitcherAudio Mixer	**IBMDSwitcherAudioMixer::CreateIterator** returns an **IBMDSwitcherAudioHeadphoneOutputIterator** interface when the **IID_IBMDSwitcherAudioHeadphoneOutputIterator** IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherAudioHeadphoneOutput** object interface.

7.4.11.1 IBMDSwitcherAudioHeadphoneOutputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherAudioHeadphoneOutput** object interface.

The **IBMDSwitcherAudioHeadphoneOutput** object interface must be released by the caller when no longer required.

Syntax

```
HRESULT    Next (IBMDSwitcherAudioHeadphoneOutput* audioHeadphoneOutput);
```

Parameters

Name	Direction	Description
audioHeadphoneOutput	out	**IBMDSwitcherAudioHeadphoneOutput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No (more) headphone outputs are available.
E_POINTER	The audioHeadphoneOutput parameter is not a valid pointer.

7.4.12 IBMDSwitcherAudioHeadphoneOutput Interface

The **IBMDSwitcherAudioHeadphoneOutput** object interface is used for manipulating parameters specific to the original audio mixer headphone outputs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioHeadphoneOutputIterator	IID_IBMDSwitcherAudioHeadphoneOutputIterator	An **IBMDSwitcherAudioHeadphoneOutput** interface can be obtained with **IBMDSwitcherAudioHeadphoneOutputIterator::Next**.

Public Member Functions	
Method	**Description**
GetGain	Get the current headphone output gain value.
SetGain	Set the headphone output gain value.
GetInputProgramOutGain	Get the current headphone program out input gain value.
SetInputProgramOutGain	Set the headphone program out input gain value.
GetInputTalkbackGain	Get the current headphone talkback input gain value.
SetInputTalkbackGain	Set the headphone talkback input gain value.
GetInputSidetoneGain	Get the current headphone sidetone (microphone) input gain value.
SetInputSidetoneGain	Set the headphone sidetone (microphone) input gain value.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.4.12.1 IBMDSwitcherAudioHeadphoneOutput::GetGain method

The **GetGain** method returns the gain currently applied to the headphone output.

Syntax

```
HRESULT    GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is not a valid pointer.

7.4.12.2 IBMDSwitcherAudioHeadphoneOutput::SetGain method

The **SetGain** method sets the gain to apply to the headphone output.

Syntax

```
HRESULT    SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.12.3 IBMDSwitcherAudioHeadphoneOutput::GetInputProgramOutGain method

The **GetInputProgramOutGain** method returns the gain currently applied to the program out input of the headphone output.

Syntax

```
HRESULT    GetInputProgramOutGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is not a valid pointer.

7.4.12.4 IBMDSwitcherAudioHeadphoneOutput::SetInputProgramOutGain method

The **SetInputProgramOutGain** method sets the gain to apply to the program out input of the headphone output.

Syntax

```
HRESULT     SetInputProgramOutGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.12.5 IBMDSwitcherAudioHeadphoneOutput::GetInputTalkbackGain method

The **GetInputTalkbackGain** method returns the gain currently applied to the talkback input of the headphone output.

Syntax

```
HRESULT     GetInputTalkbackGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is not a valid pointer.

7.4.12.6 IBMDSwitcherAudioHeadphoneOutput::SetInputTalkbackGain method

The **SetInputTalkbackGain** method sets the gain to apply to the talkback input of the headphone output.

Syntax

```
HRESULT     SetInputTalkbackGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.12.7 IBMDSwitcherAudioHeadphoneOutput::GetInputSidetoneGain method

The **GetInputSidetoneGain** method returns the gain currently applied to the sidetone (microphone) input of the headphone output.

Syntax

```
HRESULT     GetInputSidetoneGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is not a valid pointer.

7.4.12.8 IBMDSwitcherAudioHeadphoneOutput::SetInputSidetoneGain method

The **SetInputSidetoneGain** method sets the gain to apply to the sidetone (microphone) input of the headphone output.

Syntax

```
HRESULT     SetInputSidetoneGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.4.12.9 IBMDSwitcherAudioHeadphoneOutput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherAudioHeadphoneOutput** object. Pass an object implementing the **IBMDSwitcherAudioHeadphoneOutputCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback(IBMDSwitcherAudioHeadphoneOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioHeadphoneOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.12.10 IBMDSwitcherAudioHeadphoneOutput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback(IBMDSwitcherAudioHeadphoneOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherAudioHeadphoneOutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.4.13 IBMDSwitcherAudioHeadphoneOutputCallback Interface

The **IBMDSwitcherAudioHeadphoneOutputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherAudioHeadphoneOutput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherAudioHeadphoneOutput	IID_IBMDSwitcherAudioHeadphoneOutput	An **IBMDSwitcherAudioHeadphoneOutputCallback** object interface is installed with **IBMDSwitcherAudioHeadphoneOutput::AddCallback** and removed with **IBMDSwitcherAudioHeadphoneOutput::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.4.13.1 IBMDSwitcherAudioHeadphoneOutputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherAudioHeadphoneOutput** events occur, such as gain setting changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherAudioHeadphoneOutputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherAudioHeadphoneOutputEventType** that describes the type of event that occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5 Fairlight Audio Mixing Interface Reference

7.5.1 IBMDSwitcherFairlightAudioMixer Interface

The **IBMDSwitcherFairlightAudioMixer** object interface is the root object for all Fairlight audio mixing control and feedback.

A reference to an **IBMDSwitcherFairlightAudioMixer** object interface may be obtained from an **IBMDSwitcher** object interface using the **QueryInterface** method.

Pass **IID_IBMDSwitcherFairlightAudioMixer** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::QueryInterface** can return an **IBMDSwitcherFairlightAudioMixer** object interface.

Public Member Functions	
Method	**Description**
GetMasterOutEffect	Get a master out effect object interface.
GetMasterOutFaderGain	Get the current master out fader gain value.
SetMasterOutFaderGain	Set the master out fader gain value.
GetMasterOutFollowFadeToBlack	Get the current master out follow fade to black state.
SetMasterOutFollowFadeToBlack	Set the master out follow fade to black state.
GetAudioFollowVideoCrossfadeTransition	Get the current audio follow video crossfade transition state.
SetAudioFollowVideoCrossfadeTransition	Set the audio follow video crossfade transition state.
SetAllLevelNotificationsEnabled	Opt-in to level notifications.
ResetMasterOutPeakLevels	Reset master out peak levels.
ResetAllPeakLevels	Reset all switcher peak level statistics.
CreateIterator	Create an iterator.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.1.1 IBMDSwitcherFairlightAudioMixer::GetMasterOutEffect method

The **GetMasterOutEffect** method returns the master out effect object interface for the specified interface ID, such as **IBMDSwitcherFairlightAudioEqualizer** and **IBMDSwitcherFairlightAudioDynamicsProcessor**.

The object interface must be released by the caller when no longer required.

Syntax

```
HRESULT    GetMasterOutEffect (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Interface ID for the desired interface.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_NOINTERFACE	Interface was not found.

7.5.1.2 IBMDSwitcherFairlightAudioMixer::GetMasterOutFaderGain method

The **GetMasterOutFaderGain** method returns the current gain value.

Syntax

```
HRESULT    GetMasterOutFaderGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.1.3 IBMDSwitcherFairlightAudioMixer::SetMasterOutFaderGain method

The **SetMasterOutFaderGain** method sets the gain to apply to the master out.

Syntax

```
HRESULT    SetMasterOutFaderGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.4 IBMDSwitcherFairlightAudioMixer::GetMasterOutFollowFadeToBlack method

The **GetMasterOutFollowFadeToBlack** method returns the current follow fade to black state. When enabled the master out audio will fade in unity with a fade to black transition.

Syntax

```
HRESULT    GetMasterOutFollowFadeToBlack (boolean* follow);
```

Parameters

Name	Direction	Description
follow	out	The current follow fade to black state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The follow parameter is invalid.

7.5.1.5 IBMDSwitcherFairlightAudioMixer::SetMasterOutFollowFadeToBlack method

The **SetMasterOutFollowFadeToBlack** method sets the current follow fade to black state. When enabled the master out audio will fade in unity with a fade to black transition.

Syntax

```
HRESULT    SetMasterOutFollowFadeToBlack (boolean follow);
```

Parameters

Name	Direction	Description
follow	in	The desired follow fade to black state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.6 IBMDSwitcherFairlightAudioMixer::GetAudioFollowVideoCrossfadeTransition method

The **GetAudioFollowVideoCrossfadeTransition** method returns the current follow video with crossfade transition state. When enabled the audio will crossfade with the video.

Syntax

```
HRESULT    GetAudioFollowVideoCrossfadeTransition (boolean* transition);
```

Parameters

Name	Direction	Description
transition	out	The current follow video with crossfade transition state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The transition parameter is invalid.

7.5.1.7 IBMDSwitcherFairlightAudioMixer::SetAudioFollowVideoCrossfadeTransition method

The **SetAudioFollowVideoCrossfadeTransition** method sets the current follow video with crossfade transition state. When enabled the audio will crossfade with the video.

Syntax

```
HRESULT    SetAudioFollowVideoCrossfadeTransition (boolean transition);
```

Parameters

Name	Direction	Description
transition	in	The desired follow video with crossfade transition state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.8 IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled method

The **SetAllLevelNotificationsEnabled** method enables level statistics for the Fairlight mixer inputs and outputs. Receiving level notifications are an opt-in subscription, affecting the callbacks **IBMDSwitcherFairlightAudioMixerCallback::MasterOutLevelNotification**, **IBMDSwitcherFairlightAudioSourceCallback::OutputLevelNotification**, **IBMDSwitcherFairlightAudioDynamicsProcessorCallback::InputLevelNotification**, **IBMDSwitcherFairlightAudioDynamicsProcessorCallback::OutputLevelNotification**, **IBMDSwitcherFairlightAudioLimiterCallback::GainReductionLevelNotification**, **IBMDSwitcherFairlightAudioCompressorCallback::GainReductionLevelNotification** and **IBMDSwitcherFairlightAudioExpanderCallback::GainReductionLevelNotification**

Syntax

```
HRESULT    SetAllLevelNotificationsEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	Whether to enable notifications.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.9 IBMDSwitcherFairlightAudioMixer::ResetMasterOutPeakLevels method

The **ResetMasterOutPeakLevels** method resets the switcher's master out peak level statistics.

Syntax

```
HRESULT    ResetMasterOutPeakLevels (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.10 IBMDSwitcherFairlightAudioMixer::ResetAllPeakLevels method

The **ResetAllPeakLevels** method resets peak level statistics for all Fairlight audio mixer inputs and outputs.

Syntax

```
HRESULT    ResetAllPeakLevels (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.1.11 IBMDSwitcherFairlightAudioMixer::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID, such as **IBMDSwitcherFairlightAudioInputIterator** and **IBMDSwitcherFairlightAudioHeadphoneOutputIterator**.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

7.5.1.12 IBMDSwitcherFairlightAudioMixer::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioMixer** object. Pass an object implementing the **IBMDSwitcherFairlightAudioMixerCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherFairlightAudioMixerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioMixerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.1.13 IBMDSwitcherFairlightAudioMixer::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherFairlightAudioMixerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioMixerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.2 IBMDSwitcherFairlightAudioMixerCallback Interface

The **IBMDSwitcherFairlightAudioMixerCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioMixer** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioMixer	IID_ IBMDSwitcherFairlight AudioMixer	An **IBMDSwitcherFairlightAudioMixerCallback** object interface is installed with **IBMDSwitcherFairlightAudioMixer::AddCallback** and removed with **IBMDSwitcherFairlightAudioMixer::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
MasterOutLevelNotification	Reports level statistics.

7.5.2.1 IBMDSwitcherFairlightAudioMixerCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioMixer** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherFairlightAudioMixerEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioMixerEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.2.2 IBMDSwitcherFairlightAudioMixerCallback::MasterOutLevelNotification method

The **MasterOutLevelNotification** method is called periodically to report the current dB levels and the last known peak levels. These peak levels can be reset using **IBMDSwitcherFairlightAudioMixer::ResetMasterOutPeakLevels**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    MasterOutLevelNotification (uint32_t numLevels, const double* levels,
           uint32_t numPeakLevels, const double* peakLevels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of levels of the master out.
levels	in	The current dB levels of the master out.
numPeakLevels	in	The number of peak levels of the master out.
peakLevels	in	The highest encountered peak dB level of the master out since the last reset.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.3 IBMDSwitcherFairlightAudioInputIterator Interface

The **IBMDSwitcherFairlightAudioInputIterator** is used to enumerate the available audio inputs for the Fairlight audio mixer.

A reference to an **IBMDSwitcherFairlightAudioInputIterator** object interface may be obtained from an **IBMDSwitcherFairlightAudioMixer** object interface using the CreateIterator method.

Pass **IID_IBMDSwitcherFairlightAudioInputIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioMixer	IID_ **IBMDSwitcherFairlight AudioMixer**	**IBMDSwitcherFairlightAudioMixer::CreateIterator** can return an **IBMDSwitcherFairlightAudioInputIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherFairlightAudioInput** object interface.
GetById	Returns a pointer to an **IBMDSwitcherFairlightAudioInput** object interface, given its **BMDSwitcherAudioInputId**.

7.5.3.1 IBMDSwitcherFairlightAudioInputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherFairlightAudioInput** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherFairlightAudioInput* audioInput);
```

Parameters

Name	Direction	Description
audioInput	out	**IBMDSwitcherFairlightAudioInput** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherFairlightAudioInput** objects available.
E_POINTER	The audioInput parameter is invalid.

7.5.3.2 IBMDSwitcherFairlightAudioInputIterator::GetById method

The **GetById** method returns a pointer to an **IBMDSwitcherFairlightAudioInput** object interface, given its **BMDSwitcherAudioInputId**.

Syntax

```
HRESULT     GetById (BMDSwitcherAudioInputId audioInputId,
            IBMDSwitcherFairlightAudioInput* audioInput);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
audioInput	out	**IBMDSwitcherFairlightAudioInput** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId is not a valid identifier.
E_POINTER	The audioInput parameter is invalid.

7.5.4 IBMDSwitcherFairlightAudioInput Interface

The **IBMDSwitcherFairlightAudioInput** object interface is used for managing a Fairlight audio input.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioInputIterator	IID_ IBMDSwitcherFairlight AudioInputIterator	An **IBMDSwitcherFairlightAudioInput** object interface will be returned after a successful call to **IBMDSwitcherFairlightAudioInputIterator::Next method**.

Public Member Functions	
Method	**Description**
GetType	Get the audio input type.
GetCurrentExternalPortType	Get the current physical external port type of the Fairlight audio input.
GetSupportedConfigurations	Get the available input configurations.
GetConfiguration	Get the current input configuration.
SetConfiguration	Set the input configuration.
GetId	Returns the ID of this **IBMDSwitcherFairlightAudioInput** interface.
CreateIterator	Create an iterator.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.4.1 IBMDSwitcherFairlightAudioInput::GetType method

The **GetType** method returns the type of the Fairlight audio input.

Syntax

```
HRESULT    GetType (BMDSwitcherFairlightAudioInputType* type);
```

Parameters

Name	Direction	Description
type	out	The Fairlight audio input type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The type parameter is invalid.

7.5.4.2 IBMDSwitcherFairlightAudioInput::GetCurrentExternalPortType method

The **GetCurrentExternalPortType** method gets the current physical external port type of the Fairlight audio input. This may change if the physical input is switchable, generating the event **bmdSwitcherFairlightAudioInputEventTypeCurrentExternalPortTypeChanged**.

Syntax

```
HRESULT    GetCurrentExternalPortType (BMDSwitcherExternalPortType* type);
```

Parameters

Name	Direction	Description
type	out	The current external port type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The type parameter is invalid.

7.5.4.3 IBMDSwitcherFairlightAudioInput::GetSupportedConfigurations method

The **GetSupportedConfigurations** method returns the supported input configurations of the Fairlight audio input.

Syntax

```
HRESULT    GetSupportedConfigurations (BMDSwitcherFairlightAudioInputConfiguration*
           supportedConfigurations);
```

Parameters

Name	Direction	Description
supportedConfigurations	out	The supported Fairlight audio input configurations.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportedConfigurations parameter is invalid.

7.5.4.4 IBMDSwitcherFairlightAudioInput::GetConfiguration method

The **GetConfiguration** method returns the current Fairlight audio input configuration.

Syntax

```
HRESULT    GetConfiguration (BMDSwitcherFairlightAudioInputConfiguration* configuration);
```

Parameters

Name	Direction	Description
configuration	out	The current Fairlight audio input configuration.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The configuration parameter is invalid.

7.5.4.5 IBMDSwitcherFairlightAudioInput::SetConfiguration method

The **SetConfiguration** method sets the Fairlight audio input configuration.

Syntax

```
HRESULT    SetConfiguration (BMDSwitcherFairlightAudioInputConfiguration configuration);
```

Parameters

Name	Direction	Description
configuration	in	The Fairlight audio input configuration

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The configuration is not a valid identifier.

7.5.4.6 IBMDSwitcherFairlightAudioInput::GetId method

The **GetId** method returns the audio input's ID, used to uniquely identify an audio input within the Switcher.

Syntax

```
HRESULT    GetId (BMDSwitcherAudioInputId* audioInputId);
```

Parameters

Name	Direction	Description
audioInputId	out	**BMDSwitcherAudioInputId** identifier for the current audio input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The audioInputId parameter is invalid.

7.5.4.7 IBMDSwitcherFairlightAudioInput::CreateIterator method

The **CreateIterator** method creates an iterator object for the interface ID **IBMDSwitcherFairlightAudioSourceIterator**.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_NOINTERFACE	Interface was not found.

7.5.4.8 IBMDSwitcherFairlightAudioInput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioInput** object. Pass an object implementing the **IBMDSwitcherFairlightAudioInputCallback** interface to receive callbacks.
Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherFairlightAudioInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioInputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.4.9 IBMDSwitcherFairlightAudioInput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherFairlightAudioInputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioInputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.5 IBMDSwitcherFairlightAudioInputCallback Interface

The **IBMDSwitcherFairlightAudioInputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioInput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioInput	IID_ IBMDSwitcherFairlight AudioInput	An **IBMDSwitcherFairlightAudioInputCallback** object interface is installed with **IBMDSwitcherFairlightAudioInput::AddCallback** and removed with **IBMDSwitcherFairlightAudioInput::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.5.5.1 IBMDSwitcherFairlightAudioInputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioInput** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioInputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioInputEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.6 IBMDSwitcherFairlightAudioSourceIterator Interface

The **IBMDSwitcherFairlightAudioSourceIterator** is used to enumerate the available audio sources for a Fairlight audio mixer input.

A reference to an **IBMDSwitcherFairlightAudioSourceIterator** object interface may be obtained from an **IBMDSwitcherFairlightAudioInput** object interface using the CreateIterator method.

Pass **IID_IBMDSwitcherFairlightAudioSourceIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlightAudioInput	IID_IBMDSwitcherFairlightAudioInput	**IBMDSwitcherFairlightAudioInput::CreateIterator** can return an **IBMDSwitcherFairlightAudioSourceIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherFairlightAudioSource** object interface.
GetById	Returns a pointer to an **IBMDSwitcherFairlightAudioSource** object interface, given its **BMDSwitcherFairlightAudioSourceId**.

7.5.6.1 IBMDSwitcherFairlightAudioSourceIterator::Next method

The **Next** method returns the next available **IBMDSwitcherFairlightAudioSource** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherFairlightAudioSource* audioSource);
```

Parameters

Name	Direction	Description
audioSource	out	**IBMDSwitcherFairlightAudioSource** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherFairlightAudioSource** objects available.
E_POINTER	The audioSource parameter is invalid.

7.5.6.2 IBMDSwitcherFairlightAudioSourceIterator::GetById method

The **GetById** method returns a pointer to an **IBMDSwitcherFairlightAudioSource** object interface, given its **BMDSwitcherFairlightAudioSourceId**.

Syntax

```
HRESULT    GetById(BMDSwitcherFairlightAudioSourceId audioSourceId,
           IBMDSwitcherFairlightAudioSource* audioSource);
```

Parameters

Name	Direction	Description
audioSourceId	in	**BMDSwitcherFairlightAudioSourceId** identifier.
audioSource	out	**IBMDSwitcherFairlightAudioSource** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioSourceId is not a valid identifier.
E_POINTER	The audioSource parameter is invalid.

7.5.7 IBMDSwitcherFairlightAudioSource Interface

The **IBMDSwitcherFairlightAudioSource** object interface is used for manipulating the settings of an audio source for the Fairlight audio mixer.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioSourceIterator	IID_ IBMDSwitcherFairlight AudioSourceIterator	An **IBMDSwitcherFairlightAudioSource** object interface will be returned after a successful call to **IBMDSwitcherFairlightAudioSourceIterator::Next method**.

Public Member Functions	
Method	**Description**
IsActive	Get the current is-active state.
GetSourceType	Get the current source type.
GetMaxDelayFrames	Get the maximum delay frames.
GetDelayFrames	Get the current delay frames.
SetDelayFrames	Set the delay frames.
GetInputGain	Get the current input gain value.
SetInputGain	Set the input gain value.
HasStereoSimulation	Get the current has-stereo-simulation flag.
GetStereoSimulationIntensity	Get the current stereo-simulation-intensity percentage.
SetStereoSimulationIntensity	Set the stereo-simulation-intensity percentage.
GetEffect	Get the effect object interface.
GetPan	Get the current pan value.
SetPan	Set the pan value.
GetFaderGain	Get the current fader gain value.
SetFaderGain	Set the fader gain value.
GetSupportedMixOptions	Get the supported mix options.
GetMixOption	Get the current mix option.
SetMixOption	Set the mix option.
IsMixedIn	Get the is-mixed-in flag.
ResetOutputPeakLevels	Reset output peak level statistics.
GetId	Returns the ID of this **IBMDSwitcherFairlightAudioSource** interface.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.7.1 IBMDSwitcherFairlightAudioSource::IsActive method

The **IsActive** method indicates whether the Fairlight audio source is currently active.

Audio sources can become inactive when the configuration property of the **IBMDSwitcherFairlightAudioInput** is changed. When a source is not active, it can not be used to manipulate audio on the switcher.

Syntax

```
HRESULT    IsActive (boolean* active);
```

Parameters

Name	Direction	Description
active	out	The current is-active state.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The active parameter is invalid.

7.5.7.2 IBMDSwitcherFairlightAudioSource::GetSourceType method

The **GetSourceType** method indicates the type of Fairlight audio source.

Syntax

```
HRESULT    GetSourceType(BMDSwitcherFairlightAudioSourceType* type);
```

Parameters

Name	Direction	Description
type	out	The current Fairlight audio source type.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The type parameter is invalid.

7.5.7.3 IBMDSwitcherFairlightAudioSource::GetMaxDelayFrames method

The **GetMaxDelayFrames** method returns the maximum delay frames.

Syntax

```
HRESULT    GetMaxDelayFrames (uint16_t* maxDelay);
```

Parameters

Name	Direction	Description
maxDelay	out	Maximum number of delay frames.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The maxDelay parameter is invalid.

7.5.7.4 IBMDSwitcherFairlightAudioSource::GetDelayFrames method

The **GetDelayFrames** method returns the current number of delay frames applied to the Fairlight audio source.

Syntax

```
HRESULT    GetDelayFrames (uint16_t* delay);
```

Parameters

Name	Direction	Description
delay	out	The current number of delay frames applied to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The delay parameter is invalid.

7.5.7.5 IBMDSwitcherFairlightAudioSource::SetDelayFrames method

The **SetDelayFrames** method sets the number of delay frames to apply to the Fairlight audio source.

Syntax

```
HRESULT    SetDelayFrames (uint16_t delay);
```

Parameters

Name	Direction	Description
delay	in	The number of delay frames to apply to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.6 IBMDSwitcherFairlightAudioSource::GetInputGain method

The **GetInputGain** method returns the current input gain applied to the Fairlight audio source.

Syntax

```
HRESULT    GetInputGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The gain currently applied to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.7.7 IBMDSwitcherFairlightAudioSource::SetInputGain method

The **SetInputGain** method sets the input gain of a Fairlight audio source.

Syntax

```
HRESULT    SetInputGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The gain to apply to the audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.8 IBMDSwitcherFairlightAudioSource::HasStereoSimulation method

The **HasStereoSimulation** method indicates whether the Fairlight audio source has stereo simulation available.

Syntax

```
HRESULT    HasStereoSimulation (boolean* hasStereoSimulation);
```

Parameters

Name	Direction	Description
hasStereoSimulation	out	The has-stereo-simulation flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hasStereoSimulation parameter is invalid.

7.5.7.9 IBMDSwitcherFairlightAudioSource::GetStereoSimulationIntensity method

The **GetStereoSimulationIntensity** method returns the current intensity of the stereo simulation applied to the Fairlight audio source.

Syntax

```
HRESULT    GetStereoSimulationIntensity (double* intensity);
```

Parameters

Name	Direction	Description
intensity	out	The current stereo-simulation-intensity percentage applied to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The intensity parameter is invalid.

7.5.7.10 IBMDSwitcherFairlightAudioSource::SetStereoSimulationIntensity method

The **SetStereoSimulationIntensity** method sets the intensity of the stereo simulation to apply to the Fairlight audio source.

Syntax

```
HRESULT    SetStereoSimulationIntensity (double intensity);
```

Parameters

Name	Direction	Description
intensity	in	The desired stereo simulation intensity to apply to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.11 IBMDSwitcherFairlightAudioSource::GetEffect method

The **GetEffect** method returns the effect object interface for the specified interface ID, such as **IBMDSwitcherFairlightAudioEqualizer** and **IBMDSwitcherFairlightAudioDynamicsProcessor**.

The object interface must be released by the caller when no longer required.

Syntax

```
HRESULT    GetEffect (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Interface ID for the desired interface.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_NOINTERFACE	Interface was not found.

7.5.7.12 IBMDSwitcherFairlightAudioSource::GetPan method

The **GetPan** method returns the current pan value applied to the Fairlight audio source.

Syntax

```
HRESULT    GetPan (double* pan);
```

Parameters

Name	Direction	Description
pan	out	The pan currently applied to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The pan parameter is invalid.

7.5.7.13 IBMDSwitcherFairlightAudioSource::SetPan method

The **SetPan** method sets the pan value to apply to the Fairlight audio source.

Syntax

```
HRESULT    SetPan (double pan);
```

Parameters

Name	Direction	Description
pan	in	The pan to apply to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.14 IBMDSwitcherFairlightAudioSource::GetFaderGain method

The **GetFaderGain** method returns the current fader gain value applied to the Fairlight audio source.

Syntax

```
HRESULT    GetFaderGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The fader gain currently applied to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.7.15 IBMDSwitcherFairlightAudioSource::SetFaderGain method

The **SetFaderGain** method sets the fader gain value to apply to the Fairlight audio source.

Syntax

```
HRESULT    SetFaderGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The fader gain value to apply to the Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.16 IBMDSwitcherFairlightAudioSource::GetSupportedMixOptions method

The **GetSupportedMixOptions** method returns the supported mix options.

Syntax

```
HRESULT    GetSupportedMixOptions BMDSwitcherFairlightAudioMixOption* mixOptions);
```

Parameters

Name	Direction	Description
mixOptions	out	The available mix options.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The mixOptions parameter is invalid.

7.5.7.17 IBMDSwitcherFairlightAudioSource::GetMixOption method

The **GetMixOption** method returns the current mix option.

Syntax

```
HRESULT    GetMixOption (BMDSwitcherFairlightAudioMixOption* mixOption);
```

Parameters

Name	Direction	Description
mixOption	out	The current mix option.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The mixOption parameter is invalid.

7.5.7.18 IBMDSwitcherFairlightAudioSource::SetMixOption method

The **SetMixOption** method sets the mix option.

Syntax

```
HRESULT    SetMixOption (BMDSwitcherFairlightAudioMixOption mixOption);
```

Parameters

Name	Direction	Description
mixOption	in	The desired mix option.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.
E_INVALIDARG	The mixOption is not a valid identifier.

7.5.7.19 IBMDSwitcherFairlightAudioSource::IsMixedIn method

The **IsMixedIn** method indicates whether the Fairlight audio source is currently being mixed into the program out.

Syntax

```
HRESULT    IsMixedIn (boolean* mixedIn);
```

Parameters

Name	Direction	Description
mixedIn	out	The current mixed-in flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The mixedIn parameter is invalid.

7.5.7.20 IBMDSwitcherFairlightAudioSource::ResetOutputPeakLevels method

The **ResetOutputPeakLevels** method resets peak statistics for the Fairlight audio source.

Syntax

```
HRESULT    ResetOutputPeakLevels (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure. This can happen if the source is no longer active.

7.5.7.21 IBMDSwitcherFairlightAudioSource::GetId method

The **GetId** method returns the **BMDSwitcherFairlightAudioSourceId** of the Fairlight audio source.

Syntax

```
HRESULT    GetId (BMDSwitcherFairlightAudioSourceId* sourceId);
```

Parameters

Name	Direction	Description
sourceId	out	**BMDSwitcherFairlightAudioSourceId** identifier for the current Fairlight audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The sourceId parameter is invalid.

7.5.7.22 IBMDSwitcherFairlightAudioSource::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioSource** object. Pass an object implementing the **IBMDSwitcherFairlightAudioSourceCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherFairlightAudioSourceCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioSourceCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.7.23 IBMDSwitcherFairlightAudioSource::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherFairlightAudioSourceCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioSourceCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.8 IBMDSwitcherFairlightAudioSourceCallback Interface

The **IBMDSwitcherFairlightAudioSourceCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioSource** object.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioSource	IID_IBMDSwitcherFairlight AudioSource	An **IBMDSwitcherFairlightAudioSourceCallback** object interface is installed with **IBMDSwitcherFairlightAudioSource::AddCallback** and removed with **IBMDSwitcherFairlightAudioSource::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
OutputLevelNotification	Reports output level statistics.

7.5.8.1 IBMDSwitcherFairlightAudioSourceCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioSource** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherFairlightAudioSourceEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioSourceEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.8.2 IBMDSwitcherFairlightAudioSourceCallback::OutputLevelNotification method

The **OutputLevelNotification** method is called periodically to report the current dB output levels and the last known peak levels. These peak levels can be reset using **IBMDSwitcherFairlightAudioSource::ResetOutputPeakLevels**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    OutputLevelNotification(uint32_t numLevels, const double* levels,
           uint32_t numPeakLevels, const double* peakLevels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of output levels.
levels	in	The current output dB levels.
numPeakLevels	in	The number of output peak levels.
peakLevels	in	The highest encountered output peak level.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.9 IBMDSwitcherFairlightAudioEqualizer Interface

The **IBMDSwitcherFairlightAudioEqualizer** object interface is used for manipulating the Fairlight audio equalizer interface.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioMixer	IBMD_SwitcherFairlight AudioMixer	An **IBMDSwitcherFairlightAudioEqualizer** object interface will be returned after a successful call to **IBMDSwitcherFairlightAudioMixer:: GetMasterOutEffect method**.
IBMDSwitcherFairlight AudioSource	IID_IBMDSwitcherFairlight AudioSource	An **IBMDSwitcherFairlightAudioEqualizer** object interface will be returned after a successful call to **IBMDSwitcherFairlightAudioSource:: GetEffect method**.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current equalizer-enabled flag.
SetEnabled	Set the equaliser-enabled flag.
GetGain	Get the current gain value.
SetGain	Set the gain value.
Reset	Reset the equalizer.
CreateIterator	Create an iterator.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.9.1 IBMDSwitcherFairlightAudioEqualizer::GetEnabled method

The **GetEnabled** method returns the current equalizer enabled flag.

Syntax

```
HRESULT    GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current equalizer enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

7.5.9.2 IBMDSwitcherFairlightAudioEqualizer::SetEnabled method

The **SetEnabled** method sets the equalizer enabled flag.

Syntax

```
HRESULT    SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired equalizer enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.9.3 IBMDSwitcherFairlightAudioEqualizer::GetGain method

The **GetGain** method returns the current gain value applied to the Fairlight audio source by the equalizer.

Syntax

```
HRESULT    GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The gain currently applied to the Fairlight audio source by the equalizer.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.9.4 IBMDSwitcherFairlightAudioEqualizer::SetGain method

The **SetGain** method sets the gain value to apply to the Fairlight audio source.

Syntax

```
HRESULT    SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The gain to apply to the Fairlight audio source by the equalizer.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.9.5 IBMDSwitcherFairlightAudioEqualizer::Reset method

The **Reset** method resets the equalizer to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.9.6 IBMDSwitcherFairlightAudioEqualizer::CreateIterator method

The **CreateIterator** method creates an iterator object for the interface ID **IBMDSwitcherFairlightAudioEqualizerBandIterator**.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

7.5.9.7 IBMDSwitcherFairlightAudioEqualizer::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioEqualizer** object. Pass an object implementing the **IBMDSwitcherFairlightAudioEqualizerCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherFairlightAudioEqualizerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioEqualizerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.9.8 IBMDSwitcherFairlightAudioEqualizer::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherFairlightAudioEqualizerCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioEqualizerCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.10 IBMDSwitcherFairlightAudioEqualizerCallback Interface

The **IBMDSwitcherFairlightAudioEqualizerCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioEqualizer** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioEqualizer	IID_ IBMDSwitcherFairlight AudioEqualizer	An I**BMDSwitcherFairlightAudioEqualizerCallback** object interface is installed with **IBMDSwitcherFairlightAudioEqualizer::AddCallback** and removed with **IBMDSwitcherFairlightAudioEqualizer::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.5.10.1 IBMDSwitcherFairlightAudioEqualizerCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioEqualizer** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioEqualizerEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioEqualizerEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.11 IBMDSwitcherFairlightAudioEqualizerBandIterator Interface

The **IBMDSwitcherFairlightAudioEqualizerBandIterator** is used to enumerate the bands of a Fairlight audio equalizer.

A reference to an **IBMDSwitcherFairlightAudioEqualizerBandIterator** object interface may be obtained from an **IBMDSwitcherFairlightAudioEqualizer** object interface using the CreateIterator method.

Pass **IID_IBMDSwitcherFairlightAudioEqualizerBandIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioEqualizer	IID_ IBMDSwitcherFairlight AudioEqualizer	**IBMDSwitcherFairlightAudioEqualizer::CreateIterator** can return an **IBMDSwitcherFairlightAudioEqualizerBandIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherFairlightAudioEqualizerBand** object interface.

7.5.11.1 IBMDSwitcherFairlightAudioEqualizerBandIterator::Next method

The **Next** method returns the next available **IBMDSwitcherFairlightAudioEqualizerBand** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherFairlightAudioEqualizerBand* audioEqualizerBand);
```

Parameters

Name	Direction	Description
audioEqualizerBand	out	**IBMDSwitcherFairlightAudioEqualizerBand** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherFairlightAudioEqualizerBand** objects available.
E_POINTER	The audioEqualizerBand parameter is invalid.

7.5.12 IBMDSwitcherFairlightAudioEqualizerBand Interface

The **IBMDSwitcherFairlightAudioEqualizerBand** object interface is used for manipulating Fairlight audio equalizer bands.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioEqualizerBandIterator	IID_IBMDSwitcherFairlight AudioEqualizerBandIterator	An **IBMDSwitcherFairlightAudioEqualizerBand** interface can be obtained with **IBMDSwitcherFairlightAudioEqualizer BandIterator::Next**.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current band-enabled flag.
SetEnabled	Set the band-enabled flag.
GetSupportedShapes	Get the supported shapes.
GetShape	Get the current band shape.
SetShape	Set the band shape.
GetSupportedFrequencyRanges	Get the supported frequency ranges.
GetFrequencyRange	Get the current frequency range.
SetFrequencyRange	Set the frequency range.
GetFrequencyRangeMinMax	Get the minimum and maximum frequencies for the specified frequency range.
GetFrequency	Get the current frequency value.
SetFrequency	Set the frequency value.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetQFactor	Get the current Q factor.
SetQFactor	Set the Q factor.
Reset	Reset the equalizer band.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.12.1 IBMDSwitcherFairlightAudioEqualizerBand::GetEnabled method

The **GetEnabled** method returns the current equalizer band enabled flag.

Syntax

```
HRESULT    GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current band enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

7.5.12.2 IBMDSwitcherFairlightAudioEqualizerBand::SetEnabled method

The **SetEnabled** method sets the equalizer band enabled flag.

Syntax

```
HRESULT    SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired band enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.12.3 IBMDSwitcherFairlightAudioEqualizerBand::GetSupportedShapes method

The **GetSupportedShapes** method returns the supported equalizer band shapes.

Syntax

```
HRESULT    GetSupportedShapes (BMDSwitcherFairlightAudioEqualizerBandShape* shapes)
```

Parameters

Name	Direction	Description
shapes	out	The available shapes.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The shapes parameter is invalid.

7.5.12.4 IBMDSwitcherFairlightAudioEqualizerBand::GetShape method

The **GetShape** method returns the current equalizer band shape.

Syntax

```
HRESULT    GetShape (BMDSwitcherFairlightAudioEqualizerBandShape* shape);
```

Parameters

Name	Direction	Description
shape	out	The current shape.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The shape parameter is invalid.

7.5.12.5 IBMDSwitcherFairlightAudioEqualizerBand::SetShape method

The **SetShape** method sets the equalizer band shape.

Syntax

```
HRESULT    SetShape (BMDSwitcherFairlightAudioEqualizerBandShape shape);
```

Parameters

Name	Direction	Description
shape	in	The desired shape.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The shape is not a valid identifier.

7.5.12.6 IBMDSwitcherFairlightAudioEqualizerBand::GetSupportedFrequencyRanges method

The **GetSupportedFrequencyRanges** method returns the available frequency ranges for the equalizer band.

Syntax

```
HRESULT    GetSupportedFrequencyRanges
           (BMDSwitcherFairlightAudioEqualizerBand FrequencyRange* ranges);
```

Parameters

Name	Direction	Description
ranges	out	The available frequency ranges.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ranges parameter is invalid.

7.5.12.7 IBMDSwitcherFairlightAudioEqualizerBand::GetFrequencyRange method

The **GetFrequencyRange** method returns the current frequency range of the equalizer band.

Syntax

```
HRESULT     GetFrequencyRange
            (BMDSwitcherFairlightAudioEqualizerBand FrequencyRange* range);
```

Parameters

Name	Direction	Description
range	out	The current frequency range.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The range parameter is invalid.

7.5.12.8 IBMDSwitcherFairlightAudioEqualizerBand::SetFrequencyRange method

The **SetFrequencyRange** method sets the frequency range of the equalizer band.

Syntax

```
HRESULT     SetFrequencyRange
            (BMDSwitcherFairlightAudioEqualizerBand FrequencyRange range);
```

Parameters

Name	Direction	Description
range	in	The desired frequency range.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_INVALIDARG	The range is not a valid identifier.

7.5.12.9 IBMDSwitcherFairlightAudioEqualizerBand::GetFrequencyRangeMinMax method

The **GetFrequencyRangeMinMax** method gets the minimum and maximum frequencies of a specified **BMDSwitcherFairlightAudioEqualizerBandFrequencyRange**.

Syntax

```
HRESULT     GetFrequencyRangeMinMax
            (BMDSwitcherFairlightAudioEqualizerBandFrequencyRange range,
            uint32_t* minFreq, uint32_t* maxFreq);
```

Parameters

Name	Direction	Description
range	in	The desired frequency range.
minFreq	out	The current minimum frequency.
maxFreq	out	The current maximum frequency.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The minFreq or maxFreq parameters are invalid.
E_INVALIDARG	The range is not a valid identifier.

7.5.12.10 IBMDSwitcherFairlightAudioEqualizerBand::GetFrequency method

The **GetFrequency** method returns the current frequency of the equalizer band.

Syntax

```
HRESULT     GetFrequency (uint32_t* freq);
```

Parameters

Name	Direction	Description
freq	out	The current frequency.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The freq parameter is invalid.

7.5.12.11 IBMDSwitcherFairlightAudioEqualizerBand::SetFrequency method

The **SetFrequency** method sets the frequency of the equalizer band.

Syntax

```
HRESULT    SetFrequency (uint32_t freq);
```

Parameters

Name	Direction	Description
freq	in	The desired frequency.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.12.12 IBMDSwitcherFairlightAudioEqualizerBand::GetGain method

The **GetGain** method returns the current gain of the equalizer band.

Syntax

```
HRESULT    GetGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current gain.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.12.13 IBMDSwitcherFairlightAudioEqualizerBand::SetGain method

The **SetGain** method sets the gain of the equalizer band.

Syntax

```
HRESULT    SetGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired gain.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.12.14 IBMDSwitcherFairlightAudioEqualizerBand::GetQFactor method

The **GetQFactor** method returns the current Q factor of the equalizer band.

Syntax

```
HRESULT    GetQFactor (double* value);
```

Parameters

Name	Direction	Description
value	out	The current Q Factor.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The value parameter is invalid.

7.5.12.15 IBMDSwitcherFairlightAudioEqualizerBand::SetQFactor method

The **SetQFactor** method sets the Q factor of the equalizer band.

Syntax

```
HRESULT    SetQFactor (double value);
```

Parameters

Name	Direction	Description
value	in	The desired Q Factor.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.12.16 IBMDSwitcherFairlightAudioEqualizerBand::Reset method

The **Reset** method resets the equalizer band to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.12.17 IBMDSwitcherFairlightAudioEqualizerBand::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioEqualizerBand** object. Pass an object implementing the **IBMDSwitcherFairlightAudioEqualizerBandCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback lightAudioEqualizerBandCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioEqualizer BandCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.12.18 IBMDSwitcherFairlightAudioEqualizerBand::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherFairlightAudioEqualizerBandCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioEqualizer BandCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.13 IBMDSwitcherFairlightAudioEqualizerBandCallback Interface

The **IBMDSwitcherFairlightAudioEqualizerBandCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioEqualizerBand** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioEqualizerBand	IID_ IBMDSwitcherFairlight AudioEqualizerBand	An **IBMDSwitcherFairlightAudioEqualizerBandCallback** object interface is installed with **BMDSwitcherFairlightAudioEqualizerBand::AddCallback** and removed with **IBMDSwitcherFairlightAudioEqualizerBand:: RemoveCallback**

Public Member Functions	
Value	**Description**
Notify	Called when an event occurs.

7.5.13.1 IBMDSwitcherFairlightAudioEqualizerBandCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioEqualizerBand** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioEqualizerBandEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioEqualizer BandEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.14 IBMDSwitcherFairlightAudioDynamicsProcessor Interface

The **IBMDSwitcherFairlightAudioDynamicsProcessor** object interface is the root object for all Fairlight audio dynamics processing.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioMixer	IID_IBMDSwitcherFairlight AudioMixer	**IBMDSwitcherFairlightAudioMixer::GetMasterOutEffect** can return an **IBMDSwitcherFairlightAudioDynamicsProcessor** object interface.
IBMDSwitcherFairlight AudioSource	IID_IBMDSwitcherFairlight AudioSource	**IBMDSwitcherFairlightAudioSource::GetEffect** can return an I**BMDSwitcherFairlightAudioDynamicsProcessor** object interface.

Public Member Functions	
Method	**Description**
GetProcessor	Get the dynamics processor object interface.
GetMakeupGain	Get the current make up gain value.
SetMakeupGain	Set the make up gain value.
Reset	Reset the dynamics.
ResetInputPeakLevels	Reset the input peak level statistics.
ResetOutputPeakLevels	Reset the output peak level statistics.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.14.1 IBMDSwitcherFairlightAudioDynamicsProcessor::GetProcessor method

The **CreateIterator** method returns the dynamics processor object interface for the specified interface ID, such as **IBMDSwitcherFairlightAudioLimiter**, **IBMDSwitcherFairlightAudioCompressor**, **IBMDSwitcherFairlightAudioExpander**.

The object interface must be released by the caller when no longer required.

Syntax

```
HRESULT    GetProcessor (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Interface ID for the desired interface.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_NOINTERFACE	Interface was not found.

7.5.14.2 IBMDSwitcherFairlightAudioDynamicsProcessor::GetMakeupGain method

The **GetMakeupGain** method returns the current make up gain value.

Syntax

```
HRESULT    GetMakeupGain (double* gain);
```

Parameters

Name	Direction	Description
gain	out	The current make up gain value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gain parameter is invalid.

7.5.14.3 IBMDSwitcherFairlightAudioDynamicsProcessor::SetMakeupGain method

The **SetMakeupGain** method sets the make up gain value.

Syntax

```
HRESULT    SetMakeupGain (double gain);
```

Parameters

Name	Direction	Description
gain	in	The desired make up gain value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.14.4 IBMDSwitcherFairlightAudioDynamicsProcessor::Reset method

The **Reset** method resets the dynamics to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.14.5 IBMDSwitcherFairlightAudioDynamicsProcessor::ResetInput PeakLevels method

The **ResetInputPeakLevels** method resets the peak input level statistics.

Syntax

```
HRESULT    ResetInputPeakLevels (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.14.6 IBMDSwitcherFairlightAudioDynamicsProcessor::ResetOutput PeakLevels method

The **ResetOutputPeakLevels** method resets the peak output level statistics.

Syntax

```
HRESULT    ResetOutputPeakLevels (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.14.7 IBMDSwitcherFairlightAudioDynamicsProcessor::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioDynamicsProcessor** object. Pass an object implementing the **IBMDSwitcherFairlightAudioDynamicsProcessorCallback** interface to receive callbacks. Adding a new callback

will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherFairlightAudioDynamics ProcessorCallback*
           callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioDynamics ProcessorCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.14.8 IBMDSwitcherFairlightAudioDynamicsProcessor::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback
           (IBMDSwitcherFairlightAudioDynamicsProcessorCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioDynamics ProcessorCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.15 IBMDSwitcherFairlightAudioDynamicsProcessorCallback Interface

The **IBMDSwitcherFairlightAudioDynamicsProcessorCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioDynamicsProcessor** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioDynamicsProcessor	IID_IBMDSwitcherFairlight AudioDynamicsProcessor	An **IBMDSwitcherFairlightAudioDynamics Processor Callback** object interface is installed with **IBMDSwitcherFairlightAudioDynamicsProcessor::AddCallback** and removed with **IBMDSwitcherFairlight AudioDynamicsProcessor::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
InputLevelNotification	Reports input level statistics.
OutputLevelNotification	Reports output level statistics.

7.5.15.1 IBMDSwitcherFairlightAudioDynamicsProcessorCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioDynamicsProcessor** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioDynamics ProcessorEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioDynamics ProcessorEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.15.2 IBMDSwitcherFairlightAudioDynamicsProcessorCallback::InputLevelNotification method

The **InputLevelNotification** method is called periodically to report the current dB input levels and the last known peak levels. These peak levels can be reset using **IBMSwitcherFairlightAudioDynamicsProcessor::ResetInputPeakLevels**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    InputLevelNotification (uint32_t numLevels, const double* levels,
           uint32_t numPeakLevels, const double* peakLevels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of input levels.
levels	in	The current input dB levels.
numPeakLevels	in	The number of input peak levels.
peakLevels	in	The highest encountered input peak dB level.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.15.3 IBMDSwitcherFairlightAudioDynamicsProcessorCallback::OutputLevelNotification method

The **OutputLevelNotification** method is called periodically to report the current dB output levels and the last known peak levels. These peak levels can be reset using **IBMDSwitcherFairlightAudioDynamicsProcessor::ResetOutputPeakLevels**.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    OutputLevelNotification (uint32_t numLevels, const double* levels,
           uint32_t numPeakLevels, const double* peakLevels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of output levels.
levels	in	The current output dB levels.
numPeakLevels	in	The number of output peak levels.
peakLevels	in	The highest encountered output peak level.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16 IBMDSwitcherFairlightAudioLimiter Interface

The **IBMDSwitcherFairlightAudioLimiter** object interface is used for manipulating the Fairlight audio limiter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioDynamicsProcessor	IID_IBMDSwitcherFairlight AudioDynamicsProcessor	**IBMDSwitcherFairlightAudioDynamicsProcessor::GetProcessor** can return an **IBMDSwitcherFairlight AudioLimiter** object interface.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current limiter-enabled flag.
SetEnabled	Set the desired limiter-enabled flag.
GetThreshold	Get the current threshold value.
SetThreshold	Set the threshold value.

Public Member Functions	
Method	**Description**
GetAttack	Get the current attack value.
SetAttack	Set the attack value.
GetHold	Get the current hold value.
SetHold	Set the hold value.
GetRelease	Get the current release value.
SetRelease	Set the limiter release value.
Reset	Reset the limiter.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.16.1 IBMDSwitcherFairlightAudioLimiter::GetEnabled method

The **GetEnabled** method returns the current limiter enabled flag.

Syntax

```
HRESULT    GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current limiter enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

7.5.16.2 IBMDSwitcherFairlightAudioLimiter::SetEnabled method

The **SetEnabled** method sets the limiter enabled flag.

Syntax

```
HRESULT    SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired limiter enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.3 IBMDSwitcherFairlightAudioLimiter::GetThreshold method

The **GetThreshold** method returns the current limiter threshold value.

Syntax

```
HRESULT    GetThreshold (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current threshold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is invalid.

7.5.16.4 IBMDSwitcherFairlightAudioLimiter::SetThreshold method

The **SetThreshold** method sets the limiter threshold value.

Syntax

```
HRESULT    SetThreshold (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired threshold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.5 IBMDSwitcherFairlightAudioLimiter::GetAttack method

The **GetAttack** method returns the current limiter attack value.

Syntax

```
HRESULT    GetAttack (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current attack value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.16.6 IBMDSwitcherFairlightAudioLimiter::SetAttack method

The **SetAttack** method sets the limiter attack value.

Syntax

```
HRESULT    SetAttack (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired attack value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.7 IBMDSwitcherFairlightAudioLimiter::GetHold method

The **GetHold** method returns the current limiter hold value.

Syntax

```
HRESULT    GetHold (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current hold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.16.8 IBMDSwitcherFairlightAudioLimiter::SetHold method

The **SetHold** method sets the limiter hold value.

Syntax

```
HRESULT    SetHold (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired hold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.9 IBMDSwitcherFairlightAudioLimiter::GetRelease method

The **GetRelease** method returns the current limiter release value.

Syntax

```
HRESULT    GetRelease (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current release value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.16.10 IBMDSwitcherFairlightAudioLimiter::SetRelease method

The **SetRelease** method sets the limiter release value.

Syntax

```
HRESULT    SetRelease (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired release value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.11 IBMDSwitcherFairlightAudioLimiter::Reset method

The **Reset** method resets the limiter to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.16.12 IBMDSwitcherFairlightAudioLimiter::AddCallback method

The AddCallback method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioLimiter** object. Pass an object implementing the **IBMDSwitcherFairlightAudioAudioLimiterCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherFairlightAudioLimiterCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioLimiterCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.16.13 IBMDSwitcherFairlightAudioLimiter::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherFairlightAudioLimiterCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioLimiterCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.17 IBMDSwitcherFairlightAudioLimiterCallback Interface

The **IBMDSwitcherFairlightAudioLimiterCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioLimiter** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioLimiter	IID_IBMDSwitcherFairlight AudioLimiter	An **IBMDSwitcherFairlightAudioLimiterCallback** object interface is installed with **IBMDSwitcherFairlightAudio Limiter::AddCallback** and removed with **IBMDSwitcherFairlightAudioLimiter:: RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
GainReductionLevelNotification	Reports the gain reduction level statistics.

7.5.17.1 IBMDSwitcherFairlightAudioLimiterCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioLimiter** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioLimiterEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioLimiterEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.17.2 IBMDSwitcherFairlightAudioLimiterCallback::GainReductionLevelNotification method

The **GainReductionLevelNotification** method is called periodically to report the current gain reduction dB levels.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    GainReductionLevelNotification (uint32_t numLevels,
           const double* levels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of levels of the gain reduction.
levels	in	The current dB levels of the gain reduction.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18 IBMDSwitcherFairlightAudioCompressor Interface

The **IBMDSwitcherFairlightAudioCompressor** object interface is used for manipulating the Fairlight audio compressor.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioDynamicsProcessor	IID_IBMDSwitcherFairlight AudioDynamicsProcessor	**IBMDSwitcherFairlightAudioDynamicsProcessor::GetProcessor** can return an **IBMDSwitcherFairlightAudioCompressor** object interface.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current limiter-enabled flag.
SetEnabled	Set the desired limiter-enabled flag.
GetThreshold	Get the current threshold value.
SetThreshold	Set the threshold value.
GetAttack	Get the current attack value.
SetAttack	Set the attack value.

Public Member Functions	
Method	**Description**
GetHold	Get the current hold value.
SetHold	Set the hold value.
GetRelease	Get the current release value.
SetRelease	Set the limiter release value.
Reset	Reset the limiter.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.18.1 IBMDSwitcherFairlightAudioCompressor::GetEnabled method

The **GetEnabled** method returns the current compressor enabled flag.

Syntax

```
HRESULT    GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current compressor enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

7.5.18.2 IBMDSwitcherFairlightAudioCompressor::SetEnabled method

The **SetEnabled** method sets the desired compressor enabled flag.

Syntax

```
HRESULT    SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired compressor enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Faiure.

7.5.18.3 IBMDSwitcherFairlightAudioCompressor::GetThreshold method

The **GetThreshold** method returns the current compressor threshold value.

Syntax

```
HRESULT    GetThreshold (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current threshold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is invalid.

7.5.18.4 IBMDSwitcherFairlightAudioCompressor::SetThreshold method

The **SetThreshold** method sets the compressor threshold value.

Syntax

```
HRESULT    SetThreshold (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired threshold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18.5 IBMDSwitcherFairlightAudioCompressor::GetAttack method

The **GetAttack** method returns the current compressor attack value.

Syntax

```
HRESULT    GetAttack (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current attack value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.18.6 IBMDSwitcherFairlightAudioCompressor::SetAttack method

The **SetAttack** method sets the compressor attack value.

Syntax

```
HRESULT    SetAttack (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired attack value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18.7 IBMDSwitcherFairlightAudioCompressor::GetHold method

The **GetHold** method returns the current compressor hold value.

Syntax

```
HRESULT    GetHold (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current hold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.18.8 IBMDSwitcherFairlightAudioCompressor::SetHold method

The **SetHold** method sets the compressor hold value.

Syntax

```
HRESULT    SetHold (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired hold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18.9 IBMDSwitcherFairlightAudioCompressor::GetRelease method

The **GetRelease** method returns the current compressor release value.

Syntax

```
HRESULT    GetRelease (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current release value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.18.10 IBMDSwitcherFairlightAudioCompressor::SetRelease method

The **SetRelease** method sets the desired compressor release value.

Syntax

```
HRESULT    SetRelease (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired release value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18.11 IBMDSwitcherFairlightAudioCompressor::Reset method

The **Reset** method resets the compressor to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.18.12 IBMDSwitcherFairlightAudioCompressor::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioCompressor** object. Pass an object implementing the **IBMDSwitcherFairlightAudioCompressorCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherFairlightAudioCompressorCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlight AudioCompressor Callback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.18.13 IBMDSwitcherFairlightAudioCompressor::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherFairlightAudioCompressorCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioCompressor Callback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.19 IBMDSwitcherFairlightAudioCompressorCallback Interface

The **IBMDSwitcherFairlightAudioCompressorCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioCompressor** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioCompressor	IID_IBMDSwitcherFairlight AudioCompressor	An **IBMDSwitcherFairlightAudioCompressorCallback** object interface is installed with **IBMDSwitcherFairlightAudio Compressor::AddCallback** and removed with **IBMDSwitcherFairlightAudio Compressor::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
GainReductionLevelNotification	Reports the gain reduction level statistics.

7.5.19.1 IBMDSwitcherFairlightAudioCompressorCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioCompressor** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioCompressorEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioCompressor EventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.19.2 IBMDSwitcherFairlightAudioCompressorCallback::GainReductionLevel Notification method

The **GainReductionLevelNotification** method is called periodically to report the current gain reduction dB levels.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    GainReductionLevelNotification (uint32_t numLevels, const double* levels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of levels of the gain reduction.
levels	in	The current dB levels of the gain reduction.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20 IBMDSwitcherFairlightAudioExpander Interface

The **IBMDSwitcherFairlightAudioExpander** object interface is used for manipulating the Fairlight audio expander.

A reference to an **IBMDSwitcherFairlightAudioExpander** object interface may be obtained from an **IBMDSwitcherFairlightAudioDynamicsProcessor** object interface using the **GetProcessor** method.

Pass **IID_IBMDSwitcherFairlightAudioExpander** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioDynamicsProcessor	IID_ IBMDSwitcherFairlight AudioDynamicsProcessor	**IBMDSwitcherFairlightAudioDynamics Processor::GetProcessor** can return an **IBMDSwitcherFairlightAudioExpander** object interface.

Public Member Functions	
Method	**Description**
GetEnabled	Get the current expander-enabled flag.
SetEnabled	Set the desired expander-enabled flag.
GetGateMode	Get the current gate mode.
SetGateMode	Set the gate mode.
GetThreshold	Get the current threshold value.

Public Member Functions	
Method	**Description**
SetThreshold	Set the threshold value.
GetRange	Get the current range value.
SetRange	Set the range value.
GetRatio	Get the current ratio value.
SetRatio	Set the ratio value.
GetAttack	Get the current attack value.
SetAttack	Set the attack value.
GetHold	Get the hold value.
SetHold	Set the hold value.
GetRelease	Get the current release value.
SetRelease	Set the release value.
Reset	Reset the expander.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.20.1 IBMDSwitcherFairlightAudioExpander::GetEnabled method

The **GetEnabled** method returns the current expander enabled flag.

Syntax

```
HRESULT    GetEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	The current expander enabled flag.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The enabled parameter is invalid.

7.5.20.2 IBMDSwitcherFairlightAudioExpander::SetEnabled method

The **SetEnabled** method sets the expander enabled flag.

Syntax

```
HRESULT    SetEnabled (boolean enabled);
```

Parameters

Name	Direction	Description
enabled	in	The desired expander enabled flag.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.3 IBMDSwitcherFairlightAudioExpander::GetGateMode method

The **GetGateMode** method returns the current expander gate mode.

Syntax

```
HRESULT    GetGateMode (boolean* gateMode);
```

Parameters

Name	Direction	Description
gateMode	out	The current gate mode.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The gateMode parameter is invalid.

7.5.20.4 IBMDSwitcherFairlightAudioExpander::SetGateMode method

The **SetGateMode** method sets the expander gate mode.

Syntax

```
HRESULT    SetGateMode (boolean gateMode);
```

Parameters

Name	Direction	Description
gateMode	in	The desired gate mode.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.5 IBMDSwitcherFairlightAudioExpander::GetThreshold method

The **GetThreshold** method returns the current expander threshold value.

Syntax

```
HRESULT    GetThreshold (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current threshold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is invalid.

7.5.20.6 IBMDSwitcherFairlightAudioExpander::SetThreshold method

The **SetThreshold** method sets the expander threshold value.

Syntax

```
HRESULT    SetThreshold (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired threshold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.7 IBMDSwitcherFairlightAudioExpander::GetRange method

The **GetRange** method returns the current expander range value.

Syntax

```
HRESULT    GetRange (double* range);
```

Parameters

Name	Direction	Description
range	out	The current range value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The range parameter is invalid.

7.5.20.8 IBMDSwitcherFairlightAudioExpander::SetRange method

The **SetRange** method sets the expander range value.

Syntax

```
HRESULT    SetRange (double range);
```

Parameters

Name	Direction	Description
range	in	The desired range value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.9 IBMDSwitcherFairlightAudioExpander::GetRatio method

The **GetRatio** method returns the current expander ratio value.

Syntax

```
HRESULT    GetRatio (double* ratio);
```

Parameters

Name	Direction	Description
ratio	out	The current ratio value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ratio parameter is invalid.

7.5.20.10 IBMDSwitcherFairlightAudioExpander::SetRatio method

The **SetRatio** method sets the expander ratio value.

Syntax

```
HRESULT    SetRatio (double ratio);
```

Parameters

Name	Direction	Description
ratio	in	The desired ratio value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.11 IBMDSwitcherFairlightAudioExpander::GetAttack method

The **GetAttack** method returns the current expander attack value.

Syntax

```
HRESULT    GetAttack (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current attack value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.20.12 IBMDSwitcherFairlightAudioExpander::SetAttack method

The **SetAttack** method sets the expander attack value.

Syntax

```
HRESULT    SetAttack (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired attack value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.13 IBMDSwitcherFairlightAudioExpander::GetHold method

The **GetHold** method returns the current expander hold value.

Syntax

```
HRESULT    GetHold (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current hold value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.20.14 IBMDSwitcherFairlightAudioExpander::SetHold method

The **SetHold** method sets the expander hold value.

Syntax

```
HRESULT    SetHold (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired hold value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.15 IBMDSwitcherFairlightAudioExpander::GetRelease method

The **GetRelease** method returns the current expander release value.

Syntax

```
HRESULT    GetRelease (double* ms);
```

Parameters

Name	Direction	Description
ms	out	The current release value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ms parameter is invalid.

7.5.20.16 IBMDSwitcherFairlightAudioExpander::SetRelease method

The **SetRelease** method sets the expander release value.

Syntax

```
HRESULT    SetRelease (double ms);
```

Parameters

Name	Direction	Description
ms	in	The desired release value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.17 IBMDSwitcherFairlightAudioExpander::Reset method

The **Reset** method resets the expander to its default state.

Syntax

```
HRESULT    Reset (void);
```

Parameters

none.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.20.18 IBMDSwitcherFairlightAudioExpander::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioExpander** object. Pass an object implementing the **IBMDSwitcherFairlightAudioExpanderCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback(IBMDSwitcherFairlightAudioExpanderCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioExpanderCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.20.19 IBMDSwitcherFairlightAudioExpander::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherFairlightAudioExpanderCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioExpander Callback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.21 IBMDSwitcherFairlightAudioExpanderCallback Interface

The **IBMDSwitcherFairlightAudioExpanderCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioExpander** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioExpander	IID_IBMDSwitcherFairlight AudioExpander	An **IBMDSwitcherFairlightAudioExpanderCallback** object interface is installed with **IBMDSwitcherFairlightAudioExpander::AddCallback** and removed with **IBMDSwitcherFairlight AudioExpander::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
GainReductionLevelNotification	Reports the gain reduction level statistics.

7.5.21.1 IBMDSwitcherFairlightAudioExpanderCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioExpander** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioExpanderEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioExpander EventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.21.2 IBMDSwitcherFairlightAudioExpanderCallback::GainReductionLevel Notification method

The **GainReductionLevelNotification** method is called periodically to report the current gain reduction dB levels.

Note that this is an opt-in subscription. Enable or disable receiving these calls using **IBMDSwitcherFairlightAudioMixer::SetAllLevelNotificationsEnabled**.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    GainReductionLevelNotification (uint32_t numLevels, const double* levels);
```

Parameters

Name	Direction	Description
numLevels	in	The number of levels of the gain reduction.
levels	in	The current dB levels of the gain reduction.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.22 IBMDSwitcherFairlightAudioHeadphoneOutputIterator Interface

The **IBMDSwitcherFairlightAudioHeadphoneOutputIterator** is used to enumerate the available headphone outputs for the Fairlight audio mixer.

A reference to an **IBMDSwitcherFairlightAudioHeadphoneOutputIterator** object interface may be obtained from an **IBMDSwitcherFairlightAudioMixer** object interface using the CreateIterator method.

Pass **IID_IBMDSwitcherFairlightAudioHeadphoneOutputIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioMixer	IID_IBMDSwitcherFairlight AudioMixer	**IBMDSwitcherFairlightAudioMixer::CreateIterator** can return an **IBMDSwitcherFairlightAudio HeadphoneOutputIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherFairlightAudio HeadphoneOutput** object interface.

7.5.22.1 IBMDSwitcherFairlightAudioHeadphoneOutputIterator::Next method

The **Next** method returns the next available **IBMDSwitcherFairlightAudioHeadphoneOutput** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherFairlightAudioHeadphoneOutput* audioHeadphoneOutput);
```

Parameters

Name	Direction	Description
audioHeadphoneOutput	out	**IBMDSwitcherFairlightAudioHeadphone Output** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherFairlightAudio HeadphoneOutput** objects available.
E_POINTER	The audioHeadphoneOutput parameter is invalid.

7.5.23 IBMDSwitcherFairlightAudioHeadphoneOutput Interface

The **IBMDSwitcherFairlightAudioHeadphoneOutput** object interface is used for manipulating parameters specific to Fairlight audio headphone outputs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlightAudioHeadphoneOutputIterator	IID_IBMDSwitcherFairlightAudioHeadphoneOutputIterator	An **IBMDSwitcherFairlightAudioHeadphone Output** interface can be obtained with **IBMDSwitcherFairlightAudioHeadphoneOutput Iterator::Next**

Public Member Functions	
Method	**Description**
DoesSupportSolo	Determines if solo monitoring is supported by the switcher.
DoesSupportMute	Determines if mute is supported by the switcher.
GetGain	Get the current gain value.
SetGain	Set the gain value.
GetInputMasterOutGain	Get the current master out input gain value.
SetInputMasterOutGain	Set the master out input gain value.
GetInputMasterOutMute	Get the mute state of the master output.
SetInputMasterOutMute	Set the mute state of the master output.
DoesSupportTalkback	Determines if talkback is supported by the switcher.
GetInputTalkbackGain	Get the current talkback input gain value.
SetInputTalkbackGain	Set the talkback input gain value.
GetInputTalkbackMute	Get the mute state of the talkback output.
SetInputTalkbackMute	Set the mute state of the talkback output.
DoesSupportSidetone	Determines if sidetone is supported by the switcher.
GetInputSidetoneGain	Get the current headphone sidetone (microphone) input gain value.
SetInputSidetoneGain	Set the headphone sidetone (microphone) input gain value.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.23.1 IBMDSwitcherFairlightAudioHeadphoneOutput::DoesSupportSolo method

The **DoesSupportSolo** method is used to determine whether solo monitoring is supported by the switcher.

Syntax

```
HRESULT     DoesSupportSolo(Boolean* supportsSolo);
```

Parameters

Name	Direction	Description
supportsSolo	out	Boolean value describing whether solo monitoring is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsSolo parameter is invalid.

7.5.23.2 IBMDSwitcherFairlightAudioHeadphoneOutput::DoesSupportMute method

The **DoesSupportMute** method is used to determine whether mute is supported by the switcher.

Syntax

```
HRESULT     DoesSupportMute(Boolean* supportsMute);
```

Parameters

Name	Direction	Description
supportsMute	out	Boolean value describing whether mute is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsMute parameter is invalid.

7.5.23.3 IBMDSwitcherFairlightAudioHeadphoneOutput::GetGain method

The **GetGain** method returns the current gain applied to the Fairlight audio headphone output.

Syntax

```
HRESULT    GetGain (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current decibel value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is not a valid pointer.

7.5.23.4 IBMDSwitcherFairlightAudioHeadphoneOutput::SetGain method

The **SetGain** method sets the gain to apply to the Fairlight headphone output.

Syntax

```
HRESULT    SetGain (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired decibel value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.23.5 IBMDSwitcherFairlightAudioHeadphoneOutput::GetInputMasterOutGain method

The **GetInputMasterOutGain** method returns the gain currently applied to the master out input of the headphone output.

Syntax

```
HRESULT    GetInputMasterOutGain (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current decibel value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is not a valid pointer.

7.5.23.6 IBMDSwitcherFairlightAudioHeadphoneOutput::SetInputMasterOutGain method

The **SetInputMasterOutGain** method sets the gain to apply to the master out input of the headphone output.

Syntax

```
HRESULT    SetInputMasterOutGain (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired decibel value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.23.7 IBMDSwitcherFairlightAudioHeadphoneOutput::GetInputMasterOutMute method

The **GetInputMasterOutMute** method is used to determine the current mute state of the master output.

Syntax

```
HRESULT    GetInputMasterOutMute(Boolean* muteMaster);
```

Parameters

Name	Direction	Description
muteMaster	out	The mute state of the master output.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The muteMaster parameter is invalid.

7.5.23.8 IBMDSwitcherFairlightAudioHeadphoneOutput::SetInputMasterOutMute method

The **SetInputMasterOutMute** method sets the mute state of the master output.

Syntax

```
HRESULT    SetInputMasterOutMute(Boolean muteMaster);
```

Parameters

Name	Direction	Description
muteMaster	in	The mute state of the master output.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support master output mute.
E_FAIL	Failure.

7.5.23.9 IBMDSwitcherFairlightAudioHeadphoneOutput::DoesSupportTalkback method

The **DoesSupportTalkback** method is used to determine whether talkback is supported by the switcher.

Syntax

```
HRESULT    DoesSupportTalkback(Boolean* supportsTalkback);
```

Parameters

Name	Direction	Description
supportsTalkback	out	Boolean value describing whether talkback is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsTalkback parameter is invalid.

7.5.23.10 IBMDSwitcherFairlightAudioHeadphoneOutput::GetInputTalkbackGain method

The **GetInputTalkbackGain** method returns the gain currently applied to the talkback input of the headphone output.

Syntax

```
HRESULT    GetInputTalkbackGain (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current decibel value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is not a valid pointer.

7.5.23.11 IBMDSwitcherFairlightAudioHeadphoneOutput::SetInputTalkbackGain method

The **SetInputTalkbackGain** method sets the gain to apply to the talkback input of the headphone output.

Syntax

```
HRESULT    SetInputTalkbackGain (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired decibel value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.23.12 IBMDSwitcherFairlightAudioHeadphoneOutput::GetInputTalkbackMute method

The **GetInputTalkbackMute** method is used to determine the current mute state of the talkback output.

Syntax

```
HRESULT    GetInputTalkbackMute(Boolean* muteTalkback);
```

Parameters

Name	Direction	Description
muteTalkback	out	The mute state of the talkback output.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The muteTalkback parameter is invalid.

7.5.23.13 IBMDSwitcherFairlightAudioHeadphoneOutput::SetInputTalkbackMute method

The **SetInputTalkbackMute** method sets the mute state of the talkback output.

Syntax

```
HRESULT    SetInputTalkbackMute(Boolean muteTalkback);
```

Parameters

Name	Direction	Description
muteTalkback	in	The mute state of the talkback output.

Return Values

Value	Description
S_OK	Success.
E_NOTIMPL	The switcher does not support talkback mute.
E_FAIL	Failure.

7.5.23.14 IBMDSwitcherFairlightAudioHeadphoneOutput::DoesSupportSidetone method

The **DoesSupportSidetone** method is used to determine whether sidetone is supported by the switcher..

Syntax

```
HRESULT    DoesSupportSidetone(Boolean* supportsSidetone);
```

Parameters

Name	Direction	Description
supportsSidetone	out	Boolean value describing whether sidetone is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsSidetone parameter is invalid.

7.5.23.15 IBMDSwitcherFairlightAudioHeadphoneOutput::GetInputSidetoneGain method

The **GetInputSidetoneGain** method returns the gain currently applied to the sidetone (microphone) input of the headphone output.

Syntax

```
HRESULT    GetInputSidetoneGain (double* decibel);
```

Parameters

Name	Direction	Description
decibel	out	The current decibel value.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The decibel parameter is not a valid pointer.

7.5.23.16 IBMDSwitcherFairlightAudioHeadphoneOutput::SetInputSidetoneGain method

The **SetInputSidetoneGain** method sets the gain to apply to the sidetone (microphone) input of the headphone output.

Syntax

```
HRESULT    SetInputSidetoneGain (double decibel);
```

Parameters

Name	Direction	Description
decibel	in	The desired decibel value.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.23.17 IBMDSwitcherFairlightAudioHeadphoneOutput::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioHeadphoneOutput** object. Pass an object implementing the **IBMDSwitcherFairlightAudioHeadphoneOutputCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherFairlightAudioHeadphoneOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioHeadphone OutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.23.18 IBMDSwitcherFairlightAudioHeadphoneOutput::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherFairlightAudioHeadphoneOutputCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioHeadphone OutputCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.24 IBMDSwitcherFairlightAudioHeadphoneOutputCallback Interface

The **IBMDSwitcherFairlightAudioHeadphoneOutputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioHeadphoneOutput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioHeadphoneOutput	IID_IBMDSwitcherFairlight AudioHeadphoneOutput	An **IBMDSwitcherFairlightAudioHeadphoneOutputCallback** object interface is installed with **IBMDSwitcherFairlightAudioHeadphoneOutput::AddCallback** and removed with **IBMDSwitcherFairlightAudioHeadphoneOutput::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.5.24.1 IBMDSwitcherFairlightAudioHeadphoneOutputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioHeadphoneOutput** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

Syntax

```
HRESULT    Notify (BMDSwitcherFairlightAudioHeadphoneOutputEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioHeadphone OutputEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.25 IBMDSwitcherFairlightAnalogAudioInput Interface

The **IBMDSwitcherFairlightAnalogAudioInput** object interface is used for manipulating Fairlight audio input settings specific to analog inputs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlightAudioInput	IID_ IBMDSwitcherFairlightAudioInput	An **IBMDSwitcherFairlightAnalogAudioInput** object interface can be obtained with **IBMDSwitcherFairlightAudioInput::QueryInterface**.

Public Member Functions	
Method	**Description**
GetSupportedInputLevels	Get the supported analog input levels.
GetInputLevel	Get the current analog input level.
SetInputLevel	Set the analog input level.
GetSupportedMicPowerModes	Get the supported microphone power modes.
GetMicPowerMode	Get the current microphone power mode.
SetMicPowerMode	Set the microphone power mode.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.5.25.1 IBMDSwitcherFairlightAnalogAudioInput::GetSupportedInputLevels method

The **GetSupportedInputLevels** method gets the available analog input levels for this audio input, given as a bit mask of **BMDSwitcherFairlightAudioAnalogInputLevel**. This bit mask can be bitwise-ANDed with any value of **BMDSwitcherFairlightAudioAnalogInputLevel** (e.g. **bmdSwitcherFairlightAudioAnalogInputLevelMicrophone**) to determine if that input level is available for this input.

Syntax

```
HRESULT    GetSupportedInputLevels (BMDSwitcherFairlightAudioAnalogInputLevel* levels)
```

Parameters

Name	Direction	Description
levels	out	The available input levels for this audio input as a bit mask of **BMDSwitcherFairlightAudioAnalogInputLevel**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The levels parameter is invalid.

7.5.25.2 IBMDSwitcherFairlightAnalogAudioInput::GetInputLevel method

The **GetInputLevel** method gets the current input level setting of the audio input. This may change if the input supports multiple input levels, generating the event **bmdSwitcherFairlightAnalogAudioInputEventTypeLevelChanged**.

Syntax

```
HRESULT     GetInputLevel(BMDSwitcherFairlightAudioAnalogInputLevel* level)
```

Parameters

Name	Direction	Description
level	out	The current input level.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The level parameter is invalid.

7.5.25.3 IBMDSwitcherFairlightAnalogAudioInput::SetInputLevel method

The **SetInputLevel** method sets the input level for this input using a **BMDSwitcherFairlightAudioAnalogInputLevel**. Not all input levels are supported for a given audio input. Call the **GetSupportedInputLevels** method to determine the available input levels for this audio input.

Syntax

```
HRESULT     SetInputLevel(BMDSwitcherFairlightAudioAnalogInputLevel level)
```

Parameters

Name	Direction	Description
level	in	The desired input level.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The level parameter is not a valid input level for this input.
E_FAIL	Failure.

7.5.25.4 IBMDSwitcherFairlightAnalogAudioInput::GetSupportedMicPowerModes method

The **GetSupportedMicPowerModes** method gets the available microphone power modes for this analog audio input, given as a bit mask of **BMDSwitcherFairlightAudioAnalogInputMicPowerMode**. This bit mask can be bitwise-ANDed with any value of **BMDSwitcherFairlightAudioAnalogInputMicPowerMode** (e.g. **bmdSwitcherFairlightAudioAnalogInputMicPowerModePlugInPower**) to determine if that power mode is available for this input.

Syntax

```
HRESULT     GetSupportedMicPowerModes
            (BMDSwitcherFairlightAudioAnalogInputMicPowerMode* powerModes);
```

Parameters

Name	Direction	Description
powerModes	out	The available microphone power modes for this analog audio input as a bit mask of **BMDSwitcherFairlightAudioAnalogInputMicPowerMode**.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The powerModes parameter is invalid.

7.5.25.5 IBMDSwitcherFairlightAnalogAudioInput::GetMicPowerMode method

The **GetMicPowerMode** method gets the current microphone power mode setting of the analog audio input. This may change if the input supports multiple power modes, generating the event **bmdSwitcherFairlightAnalogAudioInputEventTypeMicrophonePowerModeChanged**.

Syntax

```
HRESULT     GetMicPowerMode
            (BMDSwitcherFairlightAudioAnalogInputMicPowerMode* powerMode);
```

Parameters

Name	Direction	Description
powerMode	out	The current microphone power mode for this input.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The powerMode parameter is invalid.

7.5.25.6 IBMDSwitcherFairlightAnalogAudioInput::SetMicPowerMode method

The **SetMicPowerMode** method sets the microphone power mode for this input using a **BMDSwitcherFairlightAudioAnalogInputMicPowerMode**. Not all microphone power modes are supported for a given audio input. Call the **GetSupportedMicrophonePowerModes** method to determine the available power modes for this audio input. The power mode is only active if the input levels for this input are set to **bmdSwitcherFairlightAudioAnalogInputLevelMicrophone**.

Syntax

```
HRESULT     SetMicPowerMode
            (BMDSwitcherFairlightAudioAnalogInputMicPowerMode powerMode);
```

Parameters

Name	Direction	Description
powerMode	in	The desired microphone power mode.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The powerMode parameter is not a valid microphone power mode for this input.
E_FAIL	Failure.

7.5.25.7 IBMDSwitcherFairlightAnalogAudioInput::AddCallback method

The **AddCallback** method configures a callback to be called when a Fairlight analog audio input property changes, such as a change in the input level.

Adding a new callback will not affect previously added callbacks.

Callbacks will be called on a separate thread and in the order of their addition by **AddCallback**.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherFairlightAnalogAudioInputCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAnalogAudioInputCallback** interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.25.8 IBMDSwitcherFairlightAnalogAudioInput::RemoveCallback method

The RemoveCallback method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback(IBMDSwitcherFairlightAnalogAudioInputCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object to remove.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.26 IBMDSwitcherFairlightAnalogAudioInputCallback Interface

The **IBMDSwitcherFairlightAnalogAudioInputCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAnalogAudioInput** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AnalogAudioInput	IID_ IBMDSwitcherFairlight AnalogAudioInput	An **IBMDSwitcherFairlightAnalogAudioInputCallback** object interface is installed with **IBMDSwitcherFairlightAnalogAudioInput::AddCallback** and removed with **IBMDSwitcherFairlightAnalogAudioInput::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.5.26.1 IBMDSwitcherFairlightAnalogAudioInputCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAnalogAudioInput** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherFairlightAnalogAudioInputEventType eventType)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAnalogAudioInputEventType** that describes the type of event that occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.27 IBMDSwitcherFairlightAudioSolo Interface

The **IBMDSwitcherFairlightAudioSolo** object interface is used for manipulating Fairlight audio output monitoring settings.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioHeadphoneOutput	IID_ IBMDSwitcherFairlight AudioHeadphoneOutput	An **IBMDSwitcherFairlightAudioSolo** object interface can be obtained with **IBMDSwitcherFairlightAudioHeadphoneOutput::QueryInterface**.

Public Member Functions	
Method	**Description**
GetSolo	Get the current solo state.
SetSolo	Set the solo state.
GetSoloInput	Get the ID of the current solo input.
SetSoloInput	Set the ID of the solo input.
AddCallback	Add a callback
RemoveCallback	Remove a callback

7.5.27.1 IBMDSwitcherFairlightAudioSolo::GetSolo method

The **GetSolo** method gets the solo state of the audio output monitor.

Syntax

```
HRESULT     GetSolo(Boolean* solo);
```

Parameters

Name	Direction	Description
solo	out	The current solo state of the audio monitor.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The solo parameter is invalid.

7.5.27.2 IBMDSwitcherFairlightAudioSolo::SetSolo method

The **SetSolo** method sets the solo state of the audio output monitor.

Syntax

```
HRESULT     SetSolo(Boolean solo);
```

Parameters

Name	Direction	Description
solo	in	The desired solo state of the audio monitor.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.27.3 IBMDSwitcherFairlightAudioSolo::GetSoloInput method

The **GetSoloInput** method gets the input ID and source ID of the audio source being monitored.

Syntax

```
HRESULT    GetSoloInput(BMDSwitcherAudioInputId* audioInput,
           BMDSwitcherFairlightAudioSourceId* audioSource);
```

Parameters

Name	Direction	Description
audioInput	out	**BMDSwitcherAudioInputId** of the current solo audio input.
audioSource	out	**BMDSwitcherFairlightAudioSourceId** of the current solo audio source.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

7.5.27.4 IBMDSwitcherFairlightAudioSolo::SetSoloInput method

The **SetSoloInput** method sets the input ID and source ID of the audio source to be monitored.

Syntax

```
HRESULT    SetSoloInput(BMDSwitcherAudioInputId audioInput,
           BMDSwitcherFairlightAudioSourceId audioSource);
```

Parameters

Name	Direction	Description
audioInput	in	**BMDSwitcherAudioInputId** of the desired solo audio input.
audioSource	in	**BMDSwitcherFairlightAudioSourceId** of the desired solo audio source.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.5.27.5 IBMDSwitcherFairlightAudioSolo::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherFairlightAudioSolo** object. Pass an object implementing the **IBMDSwitcherFairlightAudioSoloCallback** interface to receive callbacks.

Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherFairlightAudioSoloCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioSoloCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.27.6 IBMDSwitcherFairlightAudioSolo::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherFairlightAudioSoloCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherFairlightAudioSoloCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.5.28 IBMDSwitcherFairlightAudioSoloCallback Interface

The **IBMDSwitcherFairlightAudioSoloCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherFairlightAudioSolo** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherFairlight AudioSolo	IID_ IBMDSwitcherFairlight AudioSolo	An **IBMDSwitcherFairlightAudioSoloCallback** object interface is installed with **IBMDSwitcherFairlightAudioSolo::AddCallback** and removed with **IBMDSwitcherFairlightAudioSolo::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

7.5.28.1 IBMDSwitcherFairlightAudioSoloCallback::Notify method

The **Notify** method is called when **IBMDSwitcherFairlightAudioSolo** events occur, such as solo state or solo input changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherFairlightAudioSoloEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherFairlightAudioSoloEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.6 Talkback Interface Reference

7.6.1 IBMDSwitcherTalkbackIterator Interface

The **IBMDSwitcherTalkbackIterator** is used to enumerate the available talkbacks.

A reference to an **IBMDSwitcherTalkbackIterator** object interface may be obtained from an **IBMDSwitcher** object interface using the **CreateIterator** method. Pass **IID_IBMDSwitcherTalkbackIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** can return an **IBMDSwitcherTalkbackIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherTalkback** object interface.
GetById	Returns a pointer to an **IBMDSwitcherTalkback** object interface, given its **BMDSwitcherTalkbackId**.

7.6.1.1 IBMDSwitcherTalkbackIterator::Next method

The **Next** method returns the next available **IBMDSwitcherTalkback** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherTalkback* talkback)
```

Parameters

Name	Direction	Description
talkback	out	**IBMDSwitcherTalkback** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more IBMDSwitcherTalkback objects available.
E_POINTER	The talkback parameter is invalid.

7.6.1.2 IBMDSwitcherTalkbackIterator::GetById method

The **GetById** method returns a pointer to an **IBMDSwitcherTalkback** object interface, given its **BMDSwitcherTalkbackId**.

Syntax

```
HRESULT     GetById(BMDSwitcherTalkbackId talkbackId,
            IBMDSwitcherTalkback* talkback)
```

Parameters

Name	Direction	Description
talkbackId	in	**BMDSwitcherTalkbackId** identifier.
talkback	out	**IBMDSwitcherTalkback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The talkbackId is not a valid identifier.
E_POINTER	The talkback parameter is invalid.

7.6.2 IBMDSwitcherTalkback Interface

The **IBMDSwitcherTalkback** object interface is used for managing functionality relating to the talkback features on the switcher.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherTalkback** interface can be obtained with **IBMDSwitcher::QueryInterface**.

Public Member Functions	
Method	**Description**
GetId	Query the talkback ID.
GetMuteSDI	Query the mute state of the talkback SDI input and output channels.
SetMuteSDI	Set the mute state of the talkback SDI input and output channels.
InputCanMuteSDI	Determine if the switcher has the capability of muting the talkback input SDI channels on a particular audio input.
CurrentInputSupportsMuteSDI	Determine if the current external port type of a particular audio input supports muting the talkback input SDI channels.
GetInputMuteSDI	Query the mute state of the talkback SDI channels on a particular audio input.
SetInputMuteSDI	Set the mute state of the talkback SDI channels on a particular audio input.
AddCallback	Add a callback.
RemoveCallback	Remove a callback.

7.6.2.1 IBMDSwitcherTalkback::GetId method

The **GetId** method is used to check the ID of the audio talkback channel. The ID will be a **BMDSwitcherTalkbackId** identifier.

Syntax

```
HRESULT    GetId(BMDSwitcherTalkbackId* talkbackId)
```

Parameter

Name	Direction	Description
talkbackId	out	Identifier of the talkback object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The talkbackId parameter is invalid.

7.6.2.2 IBMDSwitcherTalkback::GetMuteSDI method

The **GetMuteSDI** method returns the mute state of the audio on the dedicated talkback input SDI channels.

Syntax

```
HRESULT    GetMuteSDI (boolean* muteSDI);
```

Parameter

Name	Direction	Description
muteSDI	out	The mute state of the talkback input SDI channels.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The muteSDI parameter is not a valid pointer.

7.6.2.3 IBMDSwitcherTalkback::SetMuteSDI method

The **SetMuteSDI** method sets the mute state of the audio on the dedicated talkback input SDI channels.

Syntax

```
HRESULT    SetMuteSDI (boolean muteSDI);
```

Parameters

Name	Direction	Description
muteSDI	out	The mute state of the talkback input SDI channels.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

7.6.2.4 IBMDSwitcherTalkback::InputCanMuteSDI method

The **InputCanMuteSDI** method is used to check if the switcher has the capability to mute the talkback input SDI channels of a particular audio input. The audio input is specified by its **BMDSwitcherAudioInputId** identifier.

Syntax

```
HRESULT    InputCanMuteSDI(BMDSwitcherAudioInputId audioInputId, boolean* canMuteSDI);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
canMuteSDI	out	A Boolean value indicating whether the switcher has the capability to mute the talkback input SDI channels of the specified audio input.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId parameter is not a valid identifier.
E_POINTER	The canMuteSDI parameter is not a valid pointer.

7.6.2.5 IBMDSwitcherTalkback::CurrentInputSupportsMuteSDI method

The **CurrentInputSupportsMuteSDI** method is used to check if the current input port of a particular audio input supports muting the talkback input SDI channels. The audio input is identified by its **BMDSwitcherAudioInputId** identifier.

Syntax

```
HRESULT    CurrentInputSupportsMuteSDI (BMDSwitcherAudioInputId audioInputId,
           boolean* supportsMuteSDI);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
supportsMuteSDI	out	A Boolean value indicating whether the current audio input port supports muting the talkback SDI channels.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId parameter is not a valid identifier.
E_POINTER	The supportsMuteSDI parameter is not a valid pointer.

7.6.2.6 IBMDSwitcherTalkback::GetInputMuteSDI method

The **GetInputMuteSDI** method is used to check the mute state of the audio on the dedicated talkback input SDI channels of a particular audio input. The input is identified by its **BMDSwitcherAudioInputId** identifier.

Syntax

```
HRESULT    GetInputMuteSDI (BMDSwitcherAudioInputId audioInputId, boolean* muteSDI);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
supportsMuteSDI	out	The current mute state of the audio on the talkback input SDI channels of the audio input.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId parameter is not a valid identifier.
E_POINTER	The supportsMuteSDI parameter is not a valid pointer.
E_FAIL	Failure. This can happen if the switcher does not have the capability to mute the talkback input SDI channels of the specified audio input.

7.6.2.7 IBMDSwitcherTalkback::SetInputMuteSDI method

The **SetInputMuteSDI** method is used to set the mute state of the audio on the dedicated talkback input SDI channels for a particular audio input. The input is specified by its **BMDSwitcherAudioInputId** identifier.

Syntax

```
HRESULT    SetInputMuteSDI (BMDSwitcherAudioInputId audioInputId, boolean muteSDI);
```

Parameters

Name	Direction	Description
audioInputId	in	**BMDSwitcherAudioInputId** identifier.
muteSDI	in	The desired mute state of the audio on the talkback input SDI channels of the specified audio input.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The audioInputId parameter is not a valid identifier.
E_FAIL	Failure. This can happen if the switcher does not have the capability to mute the talkback input SDI channels of the specified audio input.

7.6.2.8 IBMDSwitcherTalkback::AddCallback method

The **AddCallback** method configures a callback to be called when a switcher talkback property changes, such as the talkback SDI mute state.

Adding a new callback will not affect previously added callbacks.

Callbacks will be called on a separate thread and in the order of their addition by **AddCallback**.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherTalkbackCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherTalkbackCallback** interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.6.2.9 IBMDSwitcherTalkback::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherTalkbackCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object to remove.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

7.6.3 IBMDSwitcherTalkbackCallback Interface

The **IBMDSwitcherTalkbackCallback** object interface is a callback class which is called when a switcher talkback event occurs, such as a change in the talkback input SDI mute state.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherTalkback	IID_IBMDSwitcherTalkback	An **IBMDSwitcherTalkbackCallback** interface may be installed with **IBMDSwitcherTalkback::AddCalback**.

Public Member Functions	
Method	**Description**
Notify	A Switcher talkback event occurred, such as a change in the talkback input SDI mute state.

7.6.3.1 IBMDSwitcherTalkbackCallback::Notify method

The **Notify** method is called when **IBMDSwitcherTalkback** events occur.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherTalkbackEventType eventType, BMDSwitcherAudioInputId
           audioInputId);
```

Parameters

Name	Direction	Description
eventType	in	A **BMDSwitcherTalkbackEventType** that describes the type of event that has occurred.
audioInputId	in	Specifies the **BMDSwitcherAudioInputId** of the audio input for the eventType. This parameter is not valid when the eventType is **bmdSwitcherTalkbackEventTypeMuteSDIChanged**, because that event does not relate to a specific audio input.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 8 — Camera Control

The Switcher Camera Control API provides programmatic access to supported Blackmagic Design cameras via ATEM switchers. Devices must support the Blackmagic Video Device Embedded Control Protocol.

Please refer to the Developer Information section of the ATEM Switchers Operation Manual for further information about the protocol.

8.1 Camera Control Data Types

8.1.1 Switcher Camera Control Event Type

BMDSwitcherCameraControlEventType enumerates the possible event types for the IBMDSwitcherCameraControlCallback object interface.

- **bmdSwitcherCameraControlEventTypePeriodicFlushIntervalChanged**
  The periodic flush interval has changed.
- **bmdSwitcherCameraControlEventTypeParameterValueChanged**
  The parameter value has changed.
- **bmdSwitcherCameraControlEventTypeParameterPeriodicFlushEnabledChanged**
  The parameter period flush enabled state has changed.

8.1.2 Switcher Camera Control Parameter Type

BMDSwitcherCameraControlParameterType enumerates the possible parameter types for the **IBMDSwitcherCameraControl** object interface.

- **bmdSwitcherCameraControlParameterTypeVoidBool**
  Boolean (1 or more values) or Void (0 values).
- **bmdSwitcherCameraControlParameterTypeSigned8Bit**
  Signed 8-bit type. This type is the same as byte.
- **bmdSwitcherCameraControlParameterTypeSigned16Bit**
  Signed 16-bit type
- **bmdSwitcherCameraControlParameterTypeSigned32Bit**
  Signed 32-bit type
- **bmdSwitcherCameraControlParameterTypeSigned64Bit**
  Signed 64-bit type
- **bmdSwitcherCameraControlParameterTypeFixedPoint16Bit**
  Binary fixed point signed number. 5 bits integer and 11 bits fractional.

8.2 Interface Reference

8.2.1 Switcher Camera Control Parameter Iterator

The **IBMDSwitcherCameraControlParameterIterator** is used to iterate control Parameters that have been previously set. A reference to an **IBMDSwitcherCameraControlParameterIterator** object interface may be obtained from an **IBMDSwitcherCameraControl** object interface using the **CreateIterator** method.

The **IBMDSwitcherCameraControlParameterIterator** interface is used to iterate through control Parameters.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherCameraControl	IID_ IBMDSwitcherCameraControl	**IBMDSwitcherCameraControl::CreateIterator** returns an **IBMDSwitcherCameraControlParameterIterator** object interface when the **IID_IBMDSwitcherCameraControlParameterIterator** IID is specified.

Public Member Functions	
Method	**Description**
Next	Returns the next control parameter.

8.2.1.1 IBMDSwitcherCameraControlParameterIterator::Next method

The **Next** method returns the next control parameter.

Syntax

```
HRESULT    Next (uint32_t* destinationDevice, uint32_t* category, uint32_t* parameter)
```

Parameters

Name	Direction	Description
destinationDevice	out	The destination device address.
category	out	The configuration category number.
parameter	out	The configuration parameter number.

Return Values

Value	Description
S_FALSE	No more control parameters are available.
S_OK	Success.
E_POINTER	One or more of the parameters is NULL.

8.2.2 IBMDSwitcherCameraControlCallback Interface

The **IBMDSwitcherCameraControlCallback** object interface is a callback class which is called when a camera control event occurs.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherCameraControl	IID_ IBMDSwitcherCameraControl	An **IBMDSwitcherCameraControlCallback** object interface may be installed with **IBMDSwitcherCameraControl::AddCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when a camera control event occurs.

8.2.2.1 IBMDSwitcherCameraControlCallback::Notify method

The **Notify** method is called when **IBMDSwitcherCameraControl** events occur. This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher. To determine the type and count of the parameter values call **IBMDSwitcherCameraControl::GetParameterInfo**.

Syntax

```
HRESULT    Notify(BMDSwitcherCameraControlEventType eventType,
           uint32_t destinationDevice, uint32_t category, uint32_t parameter)
```

Parameters

Name	Direction	Description
eventType	in	The **BMDSwitcherCameraControlEventType** that describes the type of event that has occurred.
destinationDevice	in	The destination device address.
category	in	The configuration category number available on the device.
parameter	in	The configuration parameter number available on the device.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	A parameter is invalid.

8.2.3 IBMDSwitcherCameraControl Interface

The **IBMDSwitcherCameraControl** object interface is used for controlling compatible Blackmagic Design cameras.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherCameraControl** object interface can be obtained with IBMDSwitcher::QueryInterface.

Public Member Functions	
Method	**Description**
CreateIterator	Create an iterator.
GetPeriodicFlushInterval	Get the periodic flush interval for parameters to be sent over SDI.
SetPeriodicFlushInterval	Set the periodic flush interval for parameters to be sent over SDI.
GetParameterInfo	Get the type and count of a parameter.
GetParameterPeriodicFlushEnabled	Get the status of flush enable.
SetFlags	Sets the current flag values.
ToggleFlags	Toggles the current flag values.
GetFlags	Gets the current flag values.
SetBytes	Sets the current signed 8-bit values.
OffsetBytes	Apply signed offsets to the signed 8-bit values.
GetBytes	Get the parameter values consisting of bytes.
SetInt16s	Sets the current signed 16-bit integer values.
OffsetInt16s	Apply a signed offset to the signed 16-bit integer values.
GetInt16s	Get the current signed 16-bit integer values.
SetInt32s	Sets the current signed 32-bit integer values.
OffsetInt32s	Apply a signed offset to the signed 32-bit integer values.
GetInt32s	Get the current signed 32-bit integer values.
SetInt64s	Sets the current signed 64-bit integer values.
OffsetInt64s	Apply a signed offset to the signed 64-bit integer values.
GetInt64s	Get the current signed 64-bit integer values.
OffsetFloats	Apply a signed floating point offset to the fixed point values.
SetFloats	Sets the current fixed point values.
GetFloats	Get the current fixed point values.
AddCallback	Add a callback to receive camera control event notifications.
RemoveCallback	Remove a callback.

8.2.3.1 IBMDSwitcherCameraControl::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv)
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	in	Pointer to return interface object.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_OUTOFMEMORY	Unable to allocate memory.
E_POINTER	The ppv parameter is NULL.
E_NOINTERFACE	Unable to locate interface matching iid parameter.

8.2.3.2 IBMDSwitcherCameraControl::GetPeriodicFlushInterval method

The **GetPeriodicFlushInterval** method returns the periodic interval set on the switcher.

The flush interval is the period where the nominated Parameters are sent periodically from the switcher over the SDI connection to the cameras.

Syntax

```
HRESULT    GetPeriodicFlushInterval (uint32_t *intervalMs);
```

Parameters

Name	Direction	Description
intervalMs	out	The periodic flush interval in milliseconds.

Return Values

Value	Description
E_POINTER	The intervalMs parameter is NULL.
S_OK	Success.

8.2.3.3 IBMDSwitcherCameraControl::SetPeriodicFlushInterval method

The **SetPeriodicFlushInterval** method sets the periodic flush interval on the switcher. The flush interval is the period where the Parameters are sent periodically from the switcher over the SDI connection to the cameras.

Syntax

```
HRESULT    SetPeriodicFlushInterval (uint32_t intervalMs);
```

Parameters

Name	Direction	Description
intervalMs	in	The refresh interval in milliseconds.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

8.2.3.4 IBMDSwitcherCameraControl::GetParameterInfo method

The **GetParameterInfo** method obtains the type of value (**BMDSwitcherCameraControlParameterType**) and the number of values for a given parameter.

Syntax

```
HRESULT    GetParameterInfo (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, BMDSwitcherCameraControlParameterType* type,
           uint32_t* count);
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The configuration category number.
parameter	in	The parameter number.
type	out	The parameter type.
count	out	Number of values.

Return Values

Value	Description
S_OK	Success.
E_UNEXPECTED	An unexpected type error has occurred.
E_INVALIDARG	Unable to find parameter information for the given arguments.
E_POINTER	The type or count parameter is NULL.

8.2.3.5 IBMDSwitcherCameraControl::GetParameterPeriodicFlushEnabled method

The **GetParameterPeriodicFlushEnabled** method returns the periodic flush enabled status for the parameter values. When enabled, the parameter values will be flushed periodically from the switcher over the SDI connection to the cameras. The flush interval can be changed by calling **SetPeriodicFlushInterval**.

Syntax

```
HRESULT    GetParameterPeriodicFlushEnabled (uint32_t destinationDevice, uint32_t
           category, uint32_t parameter, boolean* nabled)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The configuration category number.
parameter	in	The parameter number.
enabled	out	The periodic flush enabled status.

Return Values

Value	Description
E_POINTER	The enabled parameter is NULL.
S_OK	Success.
E_INVALIDARG	Unable to find an entry for the given arguments.

8.2.3.6 IBMDSwitcherCameraControl::SetParameterPeriodicFlushEnabled method

The **SetParameterPeriodicFlushEnabled** method sets the periodic flush enabled Parameters. The Parameters will not be flushed unless this option has been enabled. The flush interval is the period where the Parameters are sent periodically from the switcher over the SDI connection to the cameras.

Syntax

```
HRESULT    SetParameterPeriodicFlushEnabled (uint32_t destinationDevice,
           uint32_t category, uint32_t parameter, boolean enabled)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
enabled	in	Enable periodic flush.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

8.2.3.7 IBMDSwitcherCameraControl::SetFlags method

The **SetFlags** method sends flags to the cameras over SDI.

Syntax

```
HRESULT    SetFlags (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const boolean* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of parameter elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values parameter is NULL and the count is non-zero.
E_OUTOFMEMORY	There is insufficient memory to complete operation.

8.2.3.8 IBMDSwitcherCameraControl::ToggleFlags method

The **ToggleFlags** method will toggle the flags and then send the flags from the switcher to the cameras over SDI. If the parameter value is true, then the flag will be toggled otherwise it will remain the same.

Syntax

```
HRESULT    ToggleFlags (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const boolean* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of parameter elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values parameter is NULL and the count is non-zero.
E_OUTOFMEMORY	There is insufficient memory to complete operation.

8.2.3.9 IBMDSwitcherCameraControl::GetFlags method

The **GetFlags** method returns the last flags sent to the cameras over SDI.

Syntax

```
HRESULT    GetFlags (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t* count, boolean* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The element count.
values	out	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_INVALIDARG	Flags do not exist for the given arguments.
E_POINTER	The count or values parameter is NULL.

8.2.3.10 IBMDSwitcherCameraControl::SetBytes method

The **SetBytes** method sends 8-bit values to the cameras over SDI.

Syntax

```
HRESULT    SetBytes (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const int8_t* bytes)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
bytes	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The bytes argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.11 IBMDSwitcherCameraControl::OffsetBytes method

The **OffsetBytes** method will add signed offsets to the current 8-bit values and then send the offset values to the cameras over SDI.

Syntax

```
HRESULT    OffsetBytes (uint32_t destinationDevice, uint32_t category, uint32_t
           parameter, uint32_t count, const int8_t* bytes)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
bytes	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The bytes argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.12 IBMDSwitcherCameraControl::GetBytes method

The **GetBytes** method returns the last signed bytes sent to the cameras over SDI.

Syntax

```
HRESULT    GetBytes (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t* count, int8_t* bytes)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The element count.
bytes	out	The parameter values.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Bytes do not exist for the given arguments.
E_POINTER	The count or byte parameter is NULL.

8.2.3.13 IBMDSwitcherCameraControl::SetInt16s method

The **SetInt16s** method sends signed 16-bit values from the switcher to the cameras over SDI.

Syntax

```
HRESULT    SetInt16s (uint32_t destinationDevice, uint32_t category, uint32_t
           parameter, uint32_t count, const int16_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.14 IBMDSwitcherCameraControl::OffsetInt16s method

The **OffsetInt16s** method will add signed offsets to the current 16-bit values and then send the offset values to the cameras over SDI.

Syntax

```
HRESULT    OffsetInt16s (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const int16_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.15 IBMDSwitcherCameraControl::GetInt16s method

The **GetInt16s** method returns the last 16-bit signed integers sent to the cameras over SDI.

Syntax

```
HRESULT    GetInt16s (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t* count, int16_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The number of parameter elements.
values	out	The parameter values.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Int16s do not exist for the given arguments.
E_POINTER	The count or values argument is NULL.

8.2.3.16 IBMDSwitcherCameraControl::SetInt32s method

The **SetInt32s** method sends signed 32-bit values to the cameras over SDI.

Syntax

```
HRESULT    SetInt32s (uint32_t destinationDevice, uint32_t category, uint32_t
           parameter, uint32_t count, const int32_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of parameter elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.17 IBMDSwitcherCameraControl::OffsetInt32s method

The **OffsetInt32s** method will add signed offsets to the current 32-bit values and then send the offset values to the cameras over SDI.

Syntax

```
HRESULT     OffsetInt32s (uint32_t destinationDevice, uint32_t category,
            uint32_t parameter, uint32_t count, const int32_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.18 IBMDSwitcherCameraControl::GetInt32s method

The **GetInt32s** method returns the last 32-bit signed integers sent to the cameras over SDI.

Syntax

```
HRESULT     GetInt32s (uint32_t destinationDevice, uint32_t category,
            uint32_t parameter, uint32_t* count, int32_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The number of elements.
values	out	The parameter values.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Int32s do not exist for the given arguments.
E_POINTER	The count or values argument is NULL.

8.2.3.19 IBMDSwitcherCameraControl::SetInt64s method

The **SetInt64s** method sends signed 64-bit values from the switcher to the cameras over SDI.

Syntax

```
HRESULT    SetInt64s (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const int64_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of parameter elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.20 IBMDSwitcherCameraControl::OffsetInt64s method

The **OffsetInt64s** method will add signed offsets to the current 64-bit values and then send the offset values to the cameras over SDI.

Syntax

```
HRESULT    OffsetInt64s (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const int64_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.21 IBMDSwitcherCameraControl::GetInt64s method

The **GetInt64s** method returns the last 64-bit signed integers sent to the cameras over SDI.

Syntax

```
HRESULT    GetInt64s (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t* count, int64_t* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The element count.
values	out	The parameter values.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Int64s do not exist for the given arguments.
E_POINTER	The count or values argument is NULL.

8.2.3.22 IBMDSwitcherCameraControl::OffsetFloats method

The **OffsetFloats** method will add signed offsets to the current parameter values. The representable range is from -16.0 to 15.9995 (15 + 2047/2048). The resultant Parameters are sent from the switcher to the cameras over SDI.

Syntax

```
HRESULT    OffsetFloats (uint32_t destinationDevice, uint32_t category,
           uint32_t parameter, uint32_t count, const double* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The number of elements.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.23 IBMDSwitcherCameraControl::SetFloats method

The **SetFloats** method sends fixed floating point values from the switcher to the cameras over SDI. The representable range is from -16.0 to 15.9995 (15 + 2047/2048).

Syntax

```
HRESULT     SetFloats (uint32_t destinationDevice, uint32_t category,
            uint32_t parameter, uint32_t count, const double* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	in	The element count.
values	in	The parameter values.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.
E_POINTER	The values argument is NULL.
E_OUTOFMEMORY	There was insufficient memory to complete the operation.

8.2.3.24 IBMDSwitcherCameraControl::GetFloats method

The **GetFloats** method returns the last fixed point values sent to the cameras over SDI. The representable range is from -16.0 to 15.9995 (15 + 2047/2048).

Syntax

```
HRESULT     GetFloats (uint32_t destinationDevice, uint32_t category,
            uint32_t parameter, uint32_t* count, double* values)
```

Parameters

Name	Direction	Description
destinationDevice	in	The destination device address.
category	in	The category.
parameter	in	The parameter.
count	out	The element count.
values	out	The fixed point parameter values.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	Floats do not exist for the given arguments.
E_POINTER	The count or values argument is NULL.

8.2.3.25 IBMDSwitcherCameraControl::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherCameraControlCallback** object. The caller should pass an object implementing the **IBMDSwitcherCameraControlCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherCameraControlCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherCameraControlCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is NULL.

8.2.3.26 IBMDSwitcherCameraControl::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherCameraControlCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherCameraControlCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

Section 9 — Macros

The Switcher Macros API provides the functionality to record, playback, and transfer macros.

9.1 General Information

9.1.1 Macro Indexes and Identification

Each switcher is capable of storing a maximum number of macros. Each macro is uniquely identified by an index ranging from 0 to n - 1, where n is the maximum number of macros available on the switcher.

A macro is stored using the index specified on record or upload. If there is already a macro with the same index then it will be replaced, so it is best to check for an existing macro at the specified index before recording or uploading. If a macro exists at the specified index then the macro is considered valid, otherwise the index containsno macro.

9.1.2 Recording a Macro

Here are the basic steps for recording a macro on a switcher:

- Ensure you are connected to a switcher and have an **IBMDSwitcher** object.
  Please refer to the Basic Switcher Control section for how to do this.
- Get the **IBMDSwitcherMacroControl** interface from the **IBMDSwitcher** object.
- Create an **IBMDSwitcherMacroControlCallback** object and add it to the macro pool with the **IBMDSwitcherMacroControl::AddCallback** method.
- Call **IBMDSwitcherMacroControl::Record** to begin recording a new macro.
- Perform the switcher operations that you wish to record to the macro.
- Call **IBMDSwitcherMacroControl::StopRecording** to end the macro recording.

9.1.3 Downloading a Macro

Here are the basic steps for downloading a macro from a switcher:

- Ensure you are connected to a switcher and have an **IBMDSwitcher** object.
  Please refer to the Basic Switcher Control section for how to do this.
- Get the **IBMDSwitcherMacroPool** interface from the IBMDSwitcher object.
- Create an **IBMDSwitcherMacroPoolCallback** object and add it to the macro pool with the **IBMDSwitcherMacroPool::AddCallback** method.
- Call **IBMDSwitcherMacroPool::Download** to begin the transfer of a macro from the switcher. This method will return an **IBMDSwitcherTransferMacro** object which can be used to track the progress of the download. You will also be notified of the download outcome via the **IBMDSwitcherMacroPoolCallback** interface.
- Using the **IBMDSwitcherTransferMacro** object obtained from either **IBMDSwitcherMacroPool::Download** or **IBMDSwitcherMacroPoolCallback::Notify** call **IBMDSwitcherTransferMacro::GetMacro** to get the macro object.

9.1.4 Uploading a Macro

The steps for uploading a macro to a switcher are very similar to downloading:

- Ensure you are connected to a switcher and have an **IBMDSwitcher** object. Please refer to the Basic Switcher Control section for how to do this.
- Get the **IBMDSwitcherMacroPool** interface from the **IBMDSwitcher** object.
- Create an **IBMDSwitcherMacroPoolCallback** object and add it to the macro pool with the **IBMDSwitcherMacroPool::AddCallback** method.
- Use **IBMDSwitcherMediaPool::CreateMacro** to create a macro object. Populate this with your macro binary data by filling in the macro object's data buffer, which is available via the **IBMDSwitcherMacro::GetBytes** method. Alternatively, you can use an **IBMDSwitcherMacro** object obtained from a previous macro download.
- Call **IBMDSwitcherMacroPool::Upload** to begin the transfer of the macro to the switcher. This method will return an **IBMDSwitcherTransferMacro** object which can be used to track the progress of the upload. You will also be notified of the upload outcome via the **IBMDSwitcherMacroPoolCallback** interface.

9.1.5 Unsupported Operations

As the capabilities of Blackmagic Design Switcher products evolve, new functionality will be added. A macro that is created on a newer version switcher and transferred to an older version switcher may contain operations that the older switcher does not support. A macro containing unsupported operations is flagged as such and can still be played, but the unsupported operations will be ignored.

9.2 Macro Data Types

9.2.1 Macro Pool Event Type

BMDSwitcherMacroPoolEventType enumerates the possible event types for the **IBMDSwitcherMacroPoolCallback** object interface.

- **bmdSwitcherMacroPoolEventTypeValidChanged**
  A macro has been created (becomes valid), or deleted (becomes invalid).
- **bmdSwitcherMacroPoolEventTypeHasUnsupportedOpsChanged**
  A macro's unsupported operations flag has changed.
- **bmdSwitcherMacroPoolEventTypeNameChanged**
  A macro's name has changed.
- **bmdSwitcherMacroPoolEventTypeDescriptionChanged**
  A macro's description has changed.
- **bmdSwitcherMacroPoolEventTypeTransferCompleted**
  A macro transfer has completed.
- **bmdSwitcherMacroPoolEventTypeTransferCancelled**
  A macro transfer has cancelled.
- **bmdSwitcherMacroPoolEventTypeTransferFailed**
  A macro transfer has failed.

9.2.2 Macro Control Event Type

BMDSwitcherMacroControlEventType enumerates the possible event types for the **IBMDSwitcherMacroControlCallback** object interface.

- **bmdSwitcherMacroControlEventTypeRunStatusChanged**
  The switcher's macro playback state has changed
- **bmdSwitcherMacroControlEventTypeRecordStatusChanged**
  The switcher's macro record state has changed.

9.2.3 Macro Run Status

BMDSwitcherMacroRunStatus enumerates the possible macro playback states.

- **bmdSwitcherMacroRunStatusIdle**
  No macro is playing.
- **bmdSwitcherMacroRunStatusRunning**
  A macro is playing.
- **bmdSwitcherMacroRunStatusWaitingForUser**
  A macro is waiting for the user to continue playing.

9.2.4 Macro Record Status

BMDSwitcherMacroRecordStatus enumerates the possible macro record states.

- **bmdSwitcherMacroRecordStatusIdle**
  No macro is being recorded.
- **bmdSwitcherMacroRecordStatusRecording**
  A macro is being recorded.

9.3 Interface Reference

9.3.1 IBMDSwitcherMacroPool Interface

The **IBMDSwitcherMacroPool** object interface provides functionality for the transfer and deletion of macros and for accessing and modifying macro properties.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherMacroPool** object interface can be obtained with the **IBMDSwitcher:QueryInterface method**.

Public Member Functions	
Method	**Description**
GetMaxCount	Gets the number of macros that can be stored.
Delete	Deletes a macro.
IsValid	Checks if a macro exists.
HasUnsupportedOps	Checks if a macro has unsupported operations.
GetName	Gets a macro's name.
SetName	Sets a macro's name.

Public Member Functions	
Method	**Description**
GetDescription	Gets a macro's description.
SetDescription	Sets a macro's description.
CreateMacro	Creates an **IBMDSwitcherMacro** object.
Upload	Uploads a macro.
Download	Downloads a macro.
AddCallback	Adds a macro pool callback.
RemoveCallback	Removes a macro pool callback.

9.3.1.1 IBMDSwitcherMacroPool::GetMaxCount method

The **GetMaxCount** method returns the number of macros that can be stored on the switcher.

Syntax

```
HRESULT    GetMaxCount (uint32_t* maxCount);
```

Parameters

Name	Direction	Description
maxCount	out	The maximum number of macros for the switcher.

Return Values

Value	Description
E_POINTER	The maxCount parameter is invalid.
S_OK	Success.

9.3.1.2 IBMDSwitcherMacroPool::Delete method

The **Delete** method will delete (set invalid) an existing macro. If the macro is already invalid then this method has no effect.

Syntax

```
HRESULT    Delete (uint32_t index);
```

Parameters

Name	Direction	Description
index	in	Macro index.

Return Values

Value	Description
E_INVALIDARG	The index parameter is out of range.
S_OK	Success.

9.3.1.3 IBMDSwitcherMacroPool::IsValid method

The **IsValid** method checks if a macro with the specified index exists.

Syntax

```
HRESULT    IsValid (uint32_t index, boolean* valid);
```

Parameters

Name	Direction	Description
index	in	Macro index.
valid	out	Boolean value which is true if the macro is valid.

Return Values

Value	Description
E_POINTER	The valid parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
S_OK	Success.

9.3.1.4 IBMDSwitcherMacroPool::HasUnsupportedOps method

The **HasUnsupportedOps** method indicates whether a macro contains unsupported operations. A macro with unsupported operations can still be played but the unsupported operations will be ignored.

Syntax

```
HRESULT    HasUnsupportedOps (uint32_t index, boolean* hasUnsupportedOps);
```

Parameters

Name	Direction	Description
index	in	Macro index.
hasUnsupportedOps	out	Boolean value which is true if the macro contains unsupported operations.

Return Values

Value	Description
E_POINTER	The hasUnsupportedOps parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
S_OK	Success.

9.3.1.5 IBMDSwitcherMacroPool::GetName method

The **GetName** method gets the name of a macro.

Syntax

```
HRESULT    GetName (uint32_t index, string* name);
```

Parameters

Name	Direction	Description
index	in	Macro index.
name	out	Macro name.

Return Values

Value	Description
E_POINTER	The name parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to get the name.
S_OK	Success.

9.3.1.6 IBMDSwitcherMacroPool::SetName method

The **SetName** method sets the name of a macro.

Syntax

```
HRESULT    SetName (uint32_t index, string name);
```

Parameters

Name	Direction	Description
index	in	Macro index.
name	in	Macro name.

Return Values

Value	Description
E_POINTER	The name parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to set the name.
S_OK	Success.

9.3.1.7 IBMDSwitcherMacroPool::GetDescription method

The **GetDescription** method gets the description of a macro.

Syntax

```
HRESULT    GetDescription (uint32_t index, string* description);
```

Parameters

Name	Direction	Description
index	in	Macro index.
description	out	Macro description.

Return Values

Value	Description
E_POINTER	The description parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to get the description.
S_OK	Success.

9.3.1.8 IBMDSwitcherMacroPool::SetDescription method

The **SetDescription** method sets the description of a macro.

Syntax

```
HRESULT    SetDescription (uint32_t index, string description);
```

Parameters

Name	Direction	Description
index	in	Macro index.
description	out	Macro description.

Return Values

Value	Description
E_POINTER	The description parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to set the description.
S_OK	Success.

9.3.1.9 IBMDSwitcherMacroPool::CreateMacro method

The **CreateMacro** method creates an **IBMDSwitcherMacro** object. **IBMDSwitcherMacro** objects are only used for transfers.

Syntax

```
HRESULT    CreateMacro (uint32_t sizeBytes, IBMDSwitcherMacro** macro);
```

Parameters

Name	Direction	Description
sizeBytes	in	The size of the macro, in bytes.
macro	out	The **IBMDSwitcherMacro** object.

Return Values

Value	Description
E_OUTOFMEMORY	Insufficient memory to create a macro.
S_OK	Success.

9.3.1.10 IBMDSwitcherMacroPool::Upload method

The **Upload** method transfers a macro to the switcher. No more than one transfer can occur at a time.

Syntax

```
HRESULT    Upload (uint32_t index, string name, string description,
           IBMDSwitcherMacro* macro, IBMDSwitcherTransferMacro** macroTransfer);
```

Parameters

Name	Direction	Description
index	in	Destination macro index.
name	in	Destination macro name.
description	in	Destination macro description.
macro	in	**IBMDSwitcherMacro** object containing the macro binary data for the transfer.
macroTransfer	out	**IBMDSwitcherMacroTransfer** object for monitoring the progress of the transfer.

Return Values

Value	Description
E_POINTER	The name, description, or macro parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to perform a transfer.
S_OK	Success.

9.3.1.11 IBMDSwitcherMacroPool::Download method

The **Download** method transfers a macro from the switcher. No more than one transfer can occur at a time.

Syntax

```
HRESULT    Download (uint32_t index, IBMDSwitcherTransferMacro** macroTransfer);
```

Parameters

Name	Direction	Description
index	in	Destination macro index.
macroTransfer	out	**IBMDSwitcherMacroTransfer** object for monitoring the progress of the transfer and retrieving the macro binary data.

Return Values

Value	Description
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to perform a transfer.
S_OK	Success.

9.3.1.12 IBMDSwitcherMacroPool::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherMacroPool** object. Pass an object implementing the **IBMDSwitcherMacroPoolCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherMacroPoolCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMacroPoolCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

9.3.1.13 IBMDSwitcherMacroPool::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherMacroPoolCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMacroPoolCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

9.3.2 IBMDSwitcherTransferMacro Interface

The **IBMDSwitcherTransferMacro** object interface provides methods to cancel a macro transfer, monitor transfer progress, and retrieve transferred macro binary data.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMacroPool	IID_IBMDSwitcherMacroPool	**IBMDSwitcherMacroPool::Upload** and **IBMDSwitcherMacroPool::Download** return an **IBMDSwitcherTransferMacro** object.
IBMDSwitcherMacroPoolCallback	IID_IBMDSwitcherMacroPool	**IBMDSwitcherMacroPoolCallback::Notify** passes in an **IBMDSwitcherTransferMacro** object.

Public Member Functions	
Method	**Description**
Cancel	Cancels the pending transfer.
GetProgress	Gets the pending transfer's progress.
GetMacro	Gets an **IBMDSwitcherMacro** object from a completed transfer.

9.3.2.1 IBMDSwitcherTransferMacro::Cancel method

The **Cancel** method cancels the pending transfer. If there is no pending macro transfer then this method has no effect.

Syntax

```
HRESULT    Cancel (void);
```

Parameters

none

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.2.2 IBMDSwitcherTransferMacro::GetProgress method

The **GetProgress** method gets the progress of the pending transfer.

Syntax

```
HRESULT    GetProgress (double* progress);
```

Parameters

Name	Direction	Description
progress	out	Transfer progress. Range is between 0.0 to 1.0.

Return Values

Value	Description
E_POINTER	The progress parameter is invalid.
S_OK	Success.

9.3.2.3 IBMDSwitcherTransferMacro::GetMacro method

The **GetMacro** method gets the transferred **IBMDSwitcherMacro** object.

Syntax

```
HRESULT    GetMacro (IBMDSwitcherMacro** macro);
```

Parameters

Name	Direction	Description
macro	out	Pointer to an **IBMDSwitcherMacro** object.

Return Values

Value	Description
E_POINTER	The macro parameter is invalid.
E_UNEXPECTED	No transfer has been initiated.
S_OK	Success.

9.3.3 IBMDSwitcherMacro Interface

The **IBMDSwitcherMacro** object interface provides access to macro binary data used for transferring macros.

This interface does not provide access to macro properties or control to record or playback a macro. To access properties use the **IBMDSwitcherMacroPool** interface. To record or playback a macro use the **IBMDSwitcherMacroControl** interface.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMacroPool	IID_IBMDSwitcherMacroPool	**IBMDSwitcherMacroPool::CreateMacro** returns an **IBMDSwitcherMacro** object.
IBMDSwitcherTransferMacro	IID_IBMDSwitcherMacroTransfer	**IBMDSwitcherMacroTransfer::GetMacro** returns an **IBMDSwitcherMacro** object.

Public Member Functions	
Method	**Description**
GetSize	Gets the size (in bytes) of the macro binary data.
GetBytes	Gets a pointer to the macro binary data buffer.

9.3.3.1 IBMDSwitcherMacro::GetSize method

The **GetSize** method returns the size (in bytes) of the macro binary data.

Syntax

```
HRESULT    uint32_t GetSize (void);
```

Parameters

none

Return Values

Value	Description
Size	Size (in bytes) of the macro binary data.

9.3.3.2 IBMDSwitcherMacro::GetBytes method

The **GetBytes** method returns a pointer to the macro binary data buffer.

Syntax

```
HRESULT    GetBytes (void** buffer);
```

Parameters

Name	Direction	Description
buffer	out	Pointer to the macro binary data.

Return Values

Value	Description
E_POINTER	The buffer parameter is invalid.
S_OK	Success.

9.3.4 IBMDSwitcherMacroPoolCallback Interface

The **IBMDSwitcherMacroPoolCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherMacroPool** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMacroPool	IID_IBMDSwitcherMacroPool	An **IBMDSwitcherMacroPoolCallback** object interface is installed with **IBMDSwitcherMacroPool::AddCallback** and removed with **IBMDSwitcherMacroPool::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

9.3.4.1 IBMDSwitcherMacroPoolCallback::Notify method

The **Notify** method is called when an **IBMDSwitcherMacroPool** event occurs, such as macro property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherMacroPoolEventType eventType, uint32_t index,
           IBMDSwitcherTransferMacro* macroTransfer);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMacroPoolEventType** that describes the type of event that has occurred.
index	in	Index of the macro that has changed.
macroTransfer	in	If the event type is one of **bmdSwitcherMacroPoolEventTypeTransferCompleted**, **bmdSwitcherMacroPoolEventTypeTransferCancelled**, or **bmdSwitcherMacroPoolEventTypeTransferFailed** then this parameter is a pointer to the affected **IBMDSwitcherTransferMacro** interface object.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5 IBMDSwitcherMacroControl Interface

The **IBMDSwitcherMacroControl** object interface provides macro recording state, playback state, and control.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherMacroControl** object interface can be obtained with the **IBMDSwitcher::QueryInterface**.

Public Member Functions	
Method	**Description**
Run	Begins playback of a macro.
GetLoop	Gets the playback loop setting.
SetLoop	Sets the playback loop setting.
ResumeRunning	Resumes playback of a waiting macro.
StopRunning	Stops a playing or waiting macro.
Record	Begins recording of a new macro.
RecordUserWait	Inserts a user wait into the currently recording macro.
RecordPause	Inserts a time delay into the currently recording macro.
StopRecording	Ends recording.
GetRunStatus	Gets the current playback state.
GetRecordStatus	Gets the current record state.
AddCallback	Adds a macro control callback.
RemoveCallback	Removes a macro control callback.

9.3.5.1 IBMDSwitcherMacroControl::Run method

The **Run** method begins playback of a macro.

Syntax

```
HRESULT    Run (uint32_t index);
```

Parameters

Name	Direction	Description
index	in	Macro index.

Return Values

Value	Description
E_INVALIDARG	The index parameter is out of range or invalid.
E_FAIL	Failure.
S_OK	Success.

9.3.5.2 IBMDSwitcherMacroControl::GetLoop method

The **GetLoop** method gets the current loop setting. When true, a running macro will loop back to the start when the last operation completes.

Syntax

```
HRESULT    GetLoop (boolean* loop);
```

Parameters

Name	Direction	Description
loop	out	Boolean value which is true if playback will loop.

Return Values

Value	Description
E_POINTER	The loop parameter is invalid.
E_FAIL	Failure.
S_OK	Success.

9.3.5.3 IBMDSwitcherMacroControl::SetLoop method

The **SetLoop** method sets the current loop setting. When true, a running macro will loop back to the start when the last operation completes.

Syntax

```
HRESULT    SetLoop (boolean loop);
```

Parameters

Name	Direction	Description
loop	in	Desired setting for loop, which is true if playback will loop.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.4 IBMDSwitcherMacroControl::ResumeRunning method

The **ResumeRunning** method continues playback of a macro that is waiting for the user. If there is no macro currently waiting then this method has no effect.

Syntax

```
HRESULT     ResumeRunning (void);
```

Parameters

none

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.5 IBMDSwitcherMacroControl::StopRunning method

The **StopRunning** method stops the currently playing macro. If there is no macro currently playing then this method has no effect.

Syntax

```
HRESULT     StopRunning (void);
```

Parameters

none

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.6 IBMDSwitcherMacroControl::Record method

The **Record** method begins recording of a new macro.

Syntax

```
HRESULT    Record (uint32_t index, string name, string description);
```

Parameters

Name	Direction	Description
index	in	Macro index.
name	in	Name of the macro.
description	in	Description of the macro.

Return Values

Value	Description
E_POINTER	The name or description parameter is invalid.
E_INVALIDARG	The index parameter is out of range.
E_OUTOFMEMORY	Insufficient memory to record a new macro.
E_FAIL	Failure.
S_OK	Success.

9.3.5.7 IBMDSwitcherMacroControl::RecordUserWait method

The **RecordUserWait** method inserts a user wait into the currently recording macro.
If there is no macro currently recording then this method has no effect.

Syntax

```
HRESULT    RecordUserWait (void);
```

Parameters

None

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.8 IBMDSwitcherMacroControl::RecordPause method

The **RecordPause** method inserts a timed pause into the currently recording macro. If there is no macro currently recording then this method has no effect.

Syntax

```
HRESULT     RecordPause (uint32_t frames);
```

Parameters

Name	Direction	Description
frames	in	Number of frames to pause for.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.9 IBMDSwitcherMacroControl::StopRecording method

The **StopRecording** method stops the currently recording macro. If there is no macro currently recording then this method has no effect.

Syntax

```
HRESULT     StopRecording (void);
```

Parameters

none

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

9.3.5.10 IBMDSwitcherMacroControl::GetRunStatus method

The **GetRunStatus** method gets the current playback state of the switcher.

Syntax

```
HRESULT    GetRunStatus (BMDSwitcherMacroRunStatus* status,
           boolean* loop, uint32_t* index);
```

Parameters

Name	Direction	Description
status	out	**BMDSwitcherMacroRunStatus** value indicating the macro playback state.
loop	out	Boolean value which is true if playback is set to loop.
index	out	Index of the macro that is playing/waiting.

Return Values

Value	Description
E_POINTER	The status, loop, or index parameter is invalid.
S_OK	Success.

9.3.5.11 IBMDSwitcherMacroControl::GetRecordStatus method

The **GetRecordStatus** method gets the current record state of the switcher.

Syntax

```
HRESULT    GetRecordStatus(BMDSwitcherMacroRecordStatus* status, uint32_t* index);
```

Parameters

Name	Direction	Description
status	out	**BMDSwitcherMacroRecordStatus** value indicating the macro recording state.
index	out	Index of the macro that is recording.

Return Values

Value	Description
E_POINTER	The status, or index parameter is invalid.
S_OK	Success.

9.3.5.12 IBMDSwitcherMacroControl::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherMacroControl** object. Pass an object implementing the **IBMDSwitcherMacroControlCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback (IBMDSwitcherMacroControlCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMacroControlCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

9.3.5.13 IBMDSwitcherMacroControl::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherMacroControlCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherMacroControlCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

9.3.6 IBMDSwitcherMacroControlCallback Interface

The **IBMDSwitcherMacroControlCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherMacroControl** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherMacroControl	IID_ IBMDSwitcherMacroControl	An **IBMDSwitcherMacroControlCallback** object interface is installed with **IBMDSwitcherMacroControl::AddCallback** and removed with **IBMDSwitcherMacroControl::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

9.3.6.1 IBMDSwitcherMacroControlCallback::Notify method

The **Notify** method is called when an **IBMDSwitcherMacroControl** event occurs, such as a macro playback and recording states.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherMacroControlEventType eventType);
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherMacroControlEventType** that describes the type of event that has occurred.

Return Values

Value	Description
E_FAIL	Failure.
S_OK	Success.

Section 10 — HyperDeck

The Switcher HyperDeck API provides the functionality to remotely control one or more Blackmagic Design HyperDeck devices remotely, to record and playback clips.

10.1 General Information

10.1.1 HyperDeck Interfaces

Different switcher models may support different number of remote HyperDecks. Each HyperDeck interface in the device may connect to a single remote HyperDeck unit, accessible on the same local network.

Commands are issued in an asynchronous manner; they are internally queued and issued to the HyperDeck. As a result, many operations will not cause an immediate change of state until the command has been acknowledged by the HyperDeck.

10.1.2 HyperDeck Remote Control

If a HyperDeck is connected but the remote access mode (set on the HyperDeck itself) is disabled, the interface will effectively be read-only. Commands issued to change the HyperDeck state while remote access is disabled will be rejected.

10.1.3 HyperDeck Clip Cache

To speed up processing, the list of clips located on the active storage media of the HyperDeck is cached locally by the switcher. This cache is automatically invalidated when a recording session ends, or when the active storage media changes, and is signaled by a change in clip count on the HyperDeck's interface. Clients should listen for this change and discard any held clip entry references, re-fetching the new entries from the clip cache when the change occurs. Previously invalidated clip cache entires will remain invalid indefinitely.

The clip cache is filled asynchronously to free up bandwidth for user-initiated actions. This means that cache entries may exist (be valid) but may not have their clip information properties populated until a later point in time.

10.1.4 HyperDeck Configuration

An application for controlling a HyperDeck from the switcher may perform the following steps:

- Use **IBMDSwitcherDiscovery::ConnectTo** to connect to a switcher device and obtain an **IBMDSwitcher** object interface
- Use **IBMDSwitcher::CreateIterator** to get an **IBMDSwitcherHyperDeckIterator** object interface
- Obtain an **IBMDSwitcherHyperDeck** object interface using **IBMDSwitcherHyperDeckIterator::Next**
- Use **IBMDSwitcherHyperDeck::SetNetworkAddress** to configure the remote network IPv4 address of a HyperDeck
- Poll **IBMDSwitcherHyperDeck::GetConnectionStatus** to determine when the switcher has a successful connection to a HyperDeck (or listen for changes by installing a callback via **IBMDSwitcherHyperDeck::AddCallback**)

10.1.5 HyperDeck Clip Cache Configuration

An application for reading out the clips in a connected HyperDeck from the switcher may perform the following steps:

- Use **IBMDSwitcherHyperDeck::CreateIterator** to get an **IBMDSwitcherHyperDeckClipIterator** object interface
- Obtain an **IBMDSwitcherHyperDeckClip** object interface using **IBMDSwitcherHyperDeckClipIterator::Next**
- Install a callback via **IBMDSwitcherHyperDeckClip::AddCallback** to listen for information available and invalidation events

10.2 Hyperdeck Types

10.2.1 BMDSwitcherHyperDeckClipEventType

BMDSwitcherHyperDeckClipEventType enumerates the possible event types for the **IBMDSwitcherHyperDeckClipCallback** object interface.

- **bmdSwitcherHyperDeckClipEventTypeValidChanged**
  A HyperDeck clip has been created (becomes valid) or is no longer available (becomes invalid)
- **bmdSwitcherHyperDeckClipEventTypeInfoAvailableChanged**
  A HyperDeck clip's information properties (e.g. name) have become (in-)validated

10.2.2 BMDSwitcherHyperDeckEventType

BMDSwitcherHyperDeckEventType enumerates the possible event types for the **IBMDSwitcherHyperDeckCallback** object interface.

- **bmdSwitcherHyperDeckEventTypeConnectionStatusChanged**
  The connection status of a HyperDeck to the switcher has changed
- **bmdSwitcherHyperDeckEventTypeRemoteAccessEnabledChanged**
  The Remote Access function of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeStorageMediaStateChanged**
  The state of a storage media of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeEstimatedRecordTimeRemainingChanged**
  The estimated record time available of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeActiveStorageMediaChanged**
  The active storage media slot of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeClipCountChanged**
  The number of clips available on a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeSwitcherInputChanged**
  The switcher input associated with a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeFrameRateChanged**
  The video frame rate configuration of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeInterlacedVideoChanged**
  The video interlaced configuration of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeDropFrameTimeCodeChanged**
  The video drop frame configuration of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypePlayerStateChanged**
  The player state of a HyperDeck has changed

- **bmdSwitcherHyperDeckEventTypeCurrentClipChanged**
  The currently selected clip of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeCurrentClipTimeChanged**
  The timecode for the currently selected clip in a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeCurrentTimelineTimeChanged**
  The timecode for the overall timeline in a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeShuttleSpeedChanged**
  The playback speed of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeLoopedPlaybackChanged**
  The playback loop state of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeSingleClipPlaybackChanged**
  The single clip playback mode of a HyperDeck has changed
- **bmdSwitcherHyperDeckEventTypeAutoRollOnTakeChanged**
  The automatic playback of a HyperDeck on Switcher input tally has changed
- **bmdSwitcherHyperDeckEventTypeAutoRollOnTakeFrameDelayChanged**
  The frame delay of the automatic playback of a HyperDeck on Switcher input tally has changed
- **bmdSwitcherHyperDeckEventTypeNetworkAddressChanged**
  The network address of a HyperDeck has changed

10.2.3 BMDSwitcherHyperDeckClipId

BMDSwitcherHyperDeckClipId is a signed 64 bit integer type and used as a unique identifier for each clip stored on a media accessible to a HyperDeck.

10.2.4 BMDSwitcherHyperDeckId

BMDSwitcherHyperDeckId is a signed 64 bit integer type and used as a unique identifier for each HyperDeck controllable via the attached device.

10.2.5 BMDSwitcherHyperDeckPlayerState

BMDSwitcherHyperDeckPlayerState enumerates the possible HyperDeck player states for a HyperDeck.

- **bmdSwitcherHyperDeckStateUnknown**
  The state of the attached HyperDeck is not currently known.
- **bmdSwitcherHyperDeckStateIdle**
  The HyperDeck is currently idle (stopped).
- **bmdSwitcherHyperDeckStatePlay**
  The HyperDeck is currently playing a clip.
- **bmdSwitcherHyperDeckStateRecord**
  The HyperDeck is currently recording a clip.

  bmdSwitcherHyperDeckStateShuttle
  The HyperDeck is currently shuttling.

10.2.6 BMDSwitcherHyperDeckConnectionStatus

BMDSwitcherHyperDeckConnectionStatus enumerates the possible HyperDeck connection status states for a **IBMDSwitcherHyperDeck** interface.

- **bmdSwitcherHyperDeckConnectionStatusNotConnected**
  A HyperDeck is currently not connected to this interface.
- **bmdSwitcherHyperDeckConnectionStatusConnecting**
  This interface is currently attempting to connect to to a HyperDeck.
- **bmdSwitcherHyperDeckConnectionStatusConnected**
  A HyperDeck is currently connected to this interface.
- **bmdSwitcherHyperDeckConnectionStatusIncompatible**
  A HyperDeck with an incompatible firmware version is currently connected to this interface.

10.2.7 BMDSwitcherHyperDeckStorageMediaState

BMDSwitcherHyperDeckStorageMediaState enumerates the possible states of a media slot on an attached HyperDeck.

- **bmdSwitcherHyperDeckStorageMediaStateReady**
  This media slot is currently populated and ready for use.
- **bmdSwitcherHyperDeckStorageMediaStateUnavailable**
  This media slot is currently empty or cannot be accessed.

10.2.8 BMDSwitcherHyperDeckErrorType

BMDSwitcherHyperDeckErrorType enumerates the possible transient errors that may occurs on attached HyperDeck.

- **bmdSwitcherHyperDeckErrorTypeUnknown**
  An unknown error has occurred on the HyperDeck.
- **bmdSwitcherHyperDeckErrorTypeAlreadyInUse**
  Another client is currently remotely accessing the HyperDeck.
- **bmdSwitcherHyperDeckErrorTypeRemoteDisabled**
  A request was rejected by the Hyperdeck (remote access is disabled).
- **bmdSwitcherHyperDeckErrorTypeMediaFull**
  The storage media of the HyperDeck is full and new clips could not be added.
- **bmdSwitcherHyperDeckErrorTypeMediaError**
  An error occurred while attempting to access the storage media of the HyperDeck.
- **bmdSwitcherHyperDeckErrorTypeNoInput**
  There is no video signal detected on the HyperDeck input.
- **bmdSwitcherHyperDeckErrorTypeDuplicateAddress**
  Two or more HyperDeck interfaces have been configured with the same IP address.

10.3 Interface Reference

10.3.1 IBMDSwitcherHyperDeckIterator Interface

The **IBMDSwitcherHyperDeckIterator** is used to enumerate the available HyperDecks.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcher	IID_IBMDSwitcher	**IBMDSwitcher::CreateIterator** can return an **IBMDSwitcherHyperDeckIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherHyperDeck** object interface.
GetById	Returns a specific **IBMDSwitcherHyperDeck** object by its ID.

10.3.1.1 IBMDSwitcherHyperDeckIterator::Next method

The Next method returns the next available **IBMDSwitcherHyperDeck** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherHyperDeck* hyperDeck);
```

Parameters

Name	Direction	Description
hyperDeck	out	**IBMDSwitcherHyperDeck** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherHyperDeck** objects available.
E_POINTER	The hyperDeck parameter is invalid.

10.3.1.2 IBMDSwitcherHyperDeckIterator::GetById method

The **GetById** method returns the **IBMDSwitcherHyperDeck** object interface that matches the given ID.

Syntax

```
HRESULT    GetById (BMDSwitcherHyperDeckId hyperDeckId, IBMDSwitcherHyperDeck* hyperDeck);
```

Parameters

Name	Direction	Description
hyperDeckId	in	**BMDSwitcherHyperDeckId** to retrieve.
hyperDeck	out	**IBMDSwitcherHyperDeck** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The requested HyperDeck was not found.
E_POINTER	The hyperDeck parameter is invalid.

10.3.2 IBMDSwitcherHyperDeck Interface

The **IBMDSwitcherHyperDeck** object interface provides functionality for the remote control of a Blackmagic Design HyperDeck device.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcherHyperDeckIterator	IID_IBMDSwitcherHyperDeckIterator	An **IBMDSwitcherHyperDeck** object will be returned after a successful call to **IBMDSwitcherHyperDeckIterator::Next** method.

Public Member Functions	
Method	**Description**
GetId	Returns the ID of this **IBMDSwitcherHyperDeck** interface.
GetConnectionStatus	Returns the current connection status of the interface to a remote HyperDeck device.
IsRemoteAccessEnabled	Returns whether remote access is enabled.
GetStorageMediaCount	Returns the number of media slots supported by the remote HyperDeck.
GetStorageMediaState	Returns the state of a media slot in a remote HyperDeck.
GetActiveStorageMedia	Returns the index of the currently active media slot in the remote HyperDeck.
SetActiveStorageMedia	Selects the currently active media slot in the remote HyperDeck.
GetClipCount	Returns the number of clips in the active media in the remote HyperDeck.
CreateIterator	Create an iterator.
GetSwitcherInput	Returns the currently associated Switcher input.
SetSwitcherInput	Sets the associated Switcher input.

Public Member Functions	
Method	**Description**
GetFrameRate	Returns the configured video frame rate of the HyperDeck.
IsInterlacedVideo	Returns whether the configured video mode is an interlaced mode.
IsDropFrameTimeCode	Returns whether the configured video mode supports drop frames.
GetPlayerState	Returns the current player state.
GetCurrentClip	Returns the currently selected clip ID in the active storage slot.
SetCurrentClip	Sets the currently selected clip ID in the active storage slot.
GetCurrentClipTime	Returns the current timecode time within the currently selected clip.
SetCurrentClipTime	Sets the current timecode within the currently selected clip.
GetCurrentTimelineTime	Returns the current timeline timecode.
SetCurrentTimelineTime	Sets the current timeline timecode.
GetEstimatedRecordTimeRemaining	Returns the current estimated recording time across all slots.
Play	Starts playback with the current settings.
Record	Starts a new clip recording session.
Stop	Stops playback.
Shuttle	Shuttles at the given playback speed.
GetShuttleSpeed	Returns the current shuttle speed.
Jog	Jogs one or more frames in the timeline.
GetLoopedPlayback	Returns whether playback requests will loop when the clip(s) have finished playing.
SetLoopedPlayback	Sets whether playback requests will loop when the clip(s) have finished playing.
GetSingleClipPlayback	Returns whether playback requests will be bound to the currently selected clip, or the entire timeline.
SetSingleClipPlayback	Sets whether playback requests will be bound to the currently selected clip, or the entire timeline.
GetAutoRollOnTake	Sets whether the HyperDeck automatically rolls when the HyperDeck is tallied to program output.
SetAutoRollOnTake	Returns whether the HyperDeck automatically rolls when the HyperDeck is tallied to program output.
GetAutoRollOnTakeFrameDelay	Returns the automatic roll-on-take frame delay when the HyperDeck is tallied.
SetAutoRollOnTakeFrameDelay	Sets the automatic roll-on-take frame delay when the HyperDeck is tallied.
GetNetworkAddress	Returns the currently set network address of a HyperDeck interface.
SetNetworkAddress	Sets the network address of a HyperDeck interface.
AddCallback	Add a HyperDeck callback to receive property changes.
RemoveCallback	Remove a HyperDeck callback.

10.3.2.1 IBMDSwitcherHyperDeck::GetId method

The **GetId** method returns the HyperDeck's ID, used to uniquely identify a HyperDeck control interface within the Switcher.

Syntax

```
HRESULT    GetId (BMDSwitcherHyperDeckId* hyperDeckId);
```

Parameters

Name	Direction	Description
hyperDeckId	out	**BMDSwitcherHyperDeckId** identifier for the current interface.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The hyperDeckId parameter is invalid.

10.3.2.2 IBMDSwitcherHyperDeck::GetConnectionStatus method

The **GetConnectionStatus** method returns the HyperDeck's connection status, used to determine the connection state of a HyperDeck control interface within the Switcher.

Syntax

```
HRESULT    GetConnectionStatus (BMDSwitcherHyperDeckConnectionStatus* status);
```

Parameters

Name	Direction	Description
status	out	**BMDSwitcherHyperDeckConnectionStatus** connection state for the interface.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The status parameter is invalid.

10.3.2.3 IBMDSwitcherHyperDeck::IsRemoteAccessEnabled method

The **IsRemoteAccessEnabled** method returns the HyperDeck's remote access status. A connected HyperDeck is only remotely controllable if the remote access function of the HyperDeck is enabled.

A connected HyperDeck with remote access disabled is effectively read-only; set requests will be rejected by the HyperDeck and will generate a **NotifyError** callback (if a handler is installed).

Syntax

```
HRESULT    IsRemoteAccessEnabled (boolean* enabled);
```

Parameters

Name	Direction	Description
enabled	out	Boolean remote access enable state of the remote HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The status parameter is invalid.

10.3.2.4 IBMDSwitcherHyperDeck::GetStorageMediaCount method

The **GetStorageMediaCount** method returns the number of physical media storage slots on the connected HyperDeck device.

Syntax

```
HRESULT    GetStorageMediaCount (uint32_t* count);
```

Parameters

Name	Direction	Description
count	out	Number of media slots on the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The count parameter is invalid.

10.3.2.5 IBMDSwitcherHyperDeck::GetStorageMediaState method

The **GetStorageMediaState** method returns the state of a given storage media slot on a connected HyperDeck.

Syntax

```
HRESULT    GetStorageMediaState (uint32_t storageMediaId,
           BMDSwitcherHyperDeckStorageMediaState* state);
```

Parameters

Name	Direction	Description
storageMediaId	in	Storage media slot to examine.
state	out	Current state of the storage media slot.

Return Values

Value	Description
S_OK	Success.
S_FALSE	Given slot index was out of bounds.
E_FAIL	Failure.
E_POINTER	The state parameter is invalid.

10.3.2.6 IBMDSwitcherHyperDeck::GetActiveStorageMedia method

The **GetActiveStorageMedia** method returns the index of the active storage media slot on a connected HyperDeck.

If no storage media is active, this will return a -1 slot index.

Syntax

```
HRESULT    GetActiveStorageMedia (uint32_t* index);
```

Parameters

Name	Direction	Description
index	out	Active slot index of the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The index parameter is invalid.

10.3.2.7 IBMDSwitcherHyperDeck::SetActiveStorageMedia method

The **SetActiveStorageMedia** method sets the active storage media slot on a connected HyperDeck.

Syntax

```
HRESULT    SetActiveStorageMedia (uint32_t index);
```

Parameters

Name	Direction	Description
index	in	Active slot index to select in the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.8 IBMDSwitcherHyperDeck::GetClipCount method

The **GetClipCount** method returns the total number of clips in the active storage media slot on a connected HyperDeck.

Syntax

```
HRESULT    GetClipCount (uint32_t* count);
```

Parameters

Name	Direction	Description
count	out	Number of clips in the active slot of the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The count parameter is invalid.

10.3.2.9 IBMDSwitcherHyperDeck::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID.

Syntax

```
HRESULT    CreateIterator (REFIID iid, LPVOID* ppv);
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to return interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.

10.3.2.10 IBMDSwitcherHyperDeck::GetSwitcherInput method

The **GetSwitcherInput** method returns the associated Switcher input source of the HyperDeck interface. This is used to detect when a HyperDeck has tally, in particular for the roll-on-take feature.

An associated input of zero is used as a sentinel for no associated input.

Syntax

```
HRESULT    GetSwitcherInput (BMDSwitcherInputId* inputId);
```

Parameters

Name	Direction	Description
inputId	out	Associated Switcher input ID of the HyperDeck interface.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The inputId parameter is invalid.

10.3.2.11 IBMDSwitcherHyperDeck::SetSwitcherInput method

The **SetSwitcherInput** method sets the associated Switcher input source of the HyperDeck interface. This is used to detect when a HyperDeck has tally, in particular for the roll-on-take feature.

An associated input of zero is used as a sentinel for no associated input. Only external input sources are valid source inputs; an internal source will be converted to zero.

Syntax

```
HRESULT    SetSwitcherInput (BMDSwitcherInputId inputId);
```

Parameters

Name	Direction	Description
inputId	in	Switcher input ID to be associated with the HyperDeck interface.

Return Values

Value	Description
S_OK	Success.

10.3.2.12 IBMDSwitcherHyperDeck::GetFrameRate method

The **GetFrameRate** method retrieves the configured video frame rate of the connected HyperDeck.

The framerate is expressed as a number of frames per timescale units, i.e. frames per second is frameRate divided by timescale.

Syntax

```
HRESULT    GetFrameRate (uint32_t* frameRate, uint32_t* timeScale);
```

Parameters

Name	Direction	Description
frameRate	out	Video frame rate (numerator) of the configured HyperDeck.
timeScale	out	Timescale (denominator) of the video frame rate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The frameRate or timeScale parameter(s) are invalid.

10.3.2.13 IBMDSwitcherHyperDeck::IsInterlacedVideo method

The **IsInterlacedVideo** returns whether the configured video mode is an interlaced mode.

Syntax

```
HRESULT    IsInterlacedVideo (boolean* isInterlaced);
```

Parameters

Name	Direction	Description
isInterlaced	out	Boolean value of the interlaced video setting of the configured HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isInterlaced parameter is invalid.

10.3.2.14 IBMDSwitcherHyperDeck::IsDropFrameTimeCode method

The **IsDropFrameTimeCode** method retrieves the configured video drop frame timecode setting of the connected HyperDeck.

Syntax

```
HRESULT    IsDropFrameTimeCode (boolean* isDropFrame);
```

Parameters

Name	Direction	Description
isDropFrame	out	Boolean value of the drop frame timecode video setting of the configured HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The isDropFrame parameter is invalid.

10.3.2.15 IBMDSwitcherHyperDeck::GetPlayerState method

The **GetPlayerState** method retrieves the current player state of the connected HyperDeck.

Syntax

```
HRESULT    GetPlayerState (BMDSwitcherHyperDeckPlayerState* playerState);
```

Parameters

Name	Direction	Description
playerState	out	Current player state of the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The playerState parameter is invalid.

10.3.2.16 IBMDSwitcherHyperDeck::GetCurrentClip method

The **GetCurrentClip** method retrieves the currently selected clip in the active storage media of the connected HyperDeck.

If no clip is selected, this will return a -1 clip ID.

Syntax

```
HRESULT    GetCurrentClip (BMDSwitcherHyperDeckClipId* clipId);
```

Parameters

Name	Direction	Description
clipId	out	Currently selected clip ID of the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The clipId parameter is invalid.

10.3.2.17 IBMDSwitcherHyperDeck::SetCurrentClip method

The **SetCurrentClip** method sets the currently selected clip in the active storage media of the connected HyperDeck.

Syntax

```
HRESULT    SetCurrentClip (BMDSwitcherHyperDeckClipId clipId);
```

Parameters

Name	Direction	Description
clipId	in	Clip ID to select in the connected HyperDeck.

Return Values

Value	Description
S_OK	Success.

10.3.2.18 IBMDSwitcherHyperDeck::GetCurrentClipTime method

The **GetCurrentClipTime** method gets the currently selected clip's elapsed time.

Syntax

```
HRESULT    GetCurrentClipTime (uint16_t* hours, uint8_t* minutes,
           uint8_t* seconds, uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Elapsed clip time, hours component.
minutes	out	Elapsed clip time, minutes component.
seconds	out	Elapsed clip time, seconds component.
frames	out	Elapsed clip time, frames component.

Return Values

Value	Description
S_OK	Success.
S_FALSE	A clip is not currently selected.
E_POINTER	The hours, minutes, seconds and/or frames parameter is invalid.

10.3.2.19 IBMDSwitcherHyperDeck::SetCurrentClipTime method

The **SetCurrentClipTime** method seeks the currently selected clip to the specified elapsed time.

Syntax

```
HRESULT     SetCurrentClipTime (uint16_t hours, uint8_t minutes,
            uint8_t seconds, uint8_t frames);
```

Parameters

Name	Direction	Description
hours	in	Elapsed clip time, hours component.
minutes	in	Elapsed clip time, minutes component.
seconds	in	Elapsed clip time, seconds component.
frames	in	Elapsed clip time, frames component.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The given position does not exist within the currently selected clip.
E_FAIL	Could not compute a valid timecode for the specified position.

10.3.2.20 IBMDSwitcherHyperDeck::GetCurrentTimelineTime method

The **GetCurrentTimelineTime** method retrieves the current elapsed time within the Hyperdeck's entire timeline.

Syntax

```
HRESULT     GetCurrentTimelineTime (uint16_t* hours,
            uint8_t* minutes, uint8_t* seconds, uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Elapsed timeline time, hours component.
minutes	out	Elapsed timeline time, minutes component.
seconds	out	Elapsed timeline time, seconds component.
frames	out	Elapsed timeline time, frames component.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hours, minutes, seconds and/or frames parameter is invalid.

10.3.2.21 IBMDSwitcherHyperDeck::SetCurrentTimelineTime method

The **SetCurrentTimelineTime** method sets the current elapsed time within the Hyperdeck's entire timeline.

Syntax

```
HRESULT     SetCurrentTimelineTime (uint16_t hours, uint8_t minutes,
            uint8_t seconds, uint8_t frames);
```

Parameters

Name	Direction	Description
hours	in	Elapsed timeline time, hours component.
minutes	in	Elapsed timeline time, minutes component.
seconds	in	Elapsed timeline time, seconds component.
frames	in	Elapsed timeline time, frames component.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Could not compute a valid timecode for the specified position.

10.3.2.22 IBMDSwitcherHyperDeck::GetEstimatedRecordTimeRemaining method

The **GetEstimatedRecordTimeRemaining** method gets the estimated recording time remaining across the available media slots, based on the currently configured video mode settings. Note that due to compression, this value may change in a non-linear fashion.

Syntax

```
HRESULT     GetEstimatedRecordTimeRemaining (uint16_t* hours, uint8_t* minutes,
            uint8_t* seconds, uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Estimated remaining record time, hours component.
minutes	out	Estimated remaining record time, minutes component.
seconds	out	Estimated remaining record time, seconds component.
frames	out	Estimated remaining record time, frames component.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The hours, minutes, seconds and/or frames parameter is invalid.

10.3.2.23 IBMDSwitcherHyperDeck::Play method

The **Play** method starts playing the currently selected clip on the connected HyperDeck at the current timeline position.

Syntax

```
HRESULT     Play (void);
```

Parameters

None.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.24 IBMDSwitcherHyperDeck::Record method

The **Record** method starts recording on the connected HyperDeck at the current timeline position.

Syntax

```
HRESULT     Record (void);
```

Parameters

None.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.25 IBMDSwitcherHyperDeck::Stop method

The **Stop** method stops playback on the connected HyperDeck.

Syntax

```
HRESULT     Stop (void);
```

Parameters

None.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.26 IBMDSwitcherHyperDeck::Shuttle method

The **Shuttle** method starts playback on the connected HyperDeck at the requested speed.

Syntax

```
HRESULT    Shuttle (int32_t speedPercent);
```

Parameters

Name	Direction	Description
speedPercent	in	Shuttle speed, expressed as a percentage.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.27 IBMDSwitcherHyperDeck::GetShuttleSpeed method

The **GetShuttleSpeed** method retrieves the current shuttle playback speed on the connected HyperDeck.

Syntax

```
HRESULT    GetShuttleSpeed (int32_t* speedPercent);
```

Parameters

Name	Direction	Description
speedPercent	out	Shuttle speed, expressed as a percentage.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The speedPercent parameter is invalid.

10.3.2.28 IBMDSwitcherHyperDeck::Jog method

The **Jog** method moves the timeline position forwards or backwards by the specified number of frames.

Syntax

```
HRESULT    Jog (int32_t frameDelta);
```

Parameters

Name	Direction	Description
frameDelta	in	Number of frames to jog.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.29 IBMDSwitcherHyperDeck::GetLoopedPlayback method

The **GetLoopedPlayback** method retrieves the current loop state of the connected HyperDeck.

Syntax

```
HRESULT    GetLoopedPlayback (boolean* loop);
```

Parameters

Name	Direction	Description
loop	out	Current loop state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The loop parameter is invalid.

10.3.2.30 IBMDSwitcherHyperDeck::SetLoopedPlayback method

The **SetLoopedPlayback** method sets the current loop state of the connected HyperDeck.

Syntax

```
HRESULT    SetLoopedPlayback (boolean loop);
```

Parameters

Name	Direction	Description
loop	in	New loop state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.31 IBMDSwitcherHyperDeck::GetSingleClipPlayback method

The **GetSingleClipPlayback** method retrieves the current single clip playback state of the connected HyperDeck.

Syntax

```
HRESULT    GetSingleClipPlayback (boolean* single);
```

Parameters

Name	Direction	Description
single	out	Current single clip playback state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The single parameter is invalid.

10.3.2.32 IBMDSwitcherHyperDeck::SetSingleClipPlayback method

The **SetSingleClipPlayback** method sets the single clip playback state of the connected HyperDeck.

Syntax

```
HRESULT    SetSingleClipPlayback (boolean single);
```

Parameters

Name	Direction	Description
single	in	New single clip state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.33 IBMDSwitcherHyperDeck::GetAutoRollOnTake method

The **GetAutoRollOnTake** method retrieves the current roll-on-take (automatic playback on tally) state of the HyperDeck interface.

Syntax

```
HRESULT    GetAutoRollOnTake (boolean* autoRollOnTake);
```

Parameters

Name	Direction	Description
autoRollOnTake	out	Current automatic roll on take state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The autoRollOnTake parameter is invalid.

10.3.2.34 IBMDSwitcherHyperDeck::SetAutoRollOnTake method

The **SetAutoRollOnTake** method sets the current roll-on-take (automatic playback on tally) state of the HyperDeck interface.

If this feature is enabled, and the input associated with this HyperDeck interface (set by **SetSwitcherInput**) is tallied to the program output, the HyperDeck will automatically begin playing at the current timeline position after the frame delay set by **SetAutoRollOnTakeFrameDelay**.

Syntax

```
HRESULT    SetAutoRollOnTake (boolean autoRollOnTake);
```

Parameters

Name	Direction	Description
autoRollOnTake	in	New automatic roll on take state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.35 IBMDSwitcherHyperDeck::GetAutoRollOnTakeFrameDelay method

The **GetAutoRollOnTakeFrameDelay** method retrieves the current automatic playback on tally state frame delay of the HyperDeck interface.

Syntax

```
HRESULT    GetAutoRollOnTakeFrameDelay (uint16_t* frameDelay);
```

Parameters

Name	Direction	Description
frameDelay	out	Current automatic roll on take frame delay.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The frameDelay parameter is invalid.

10.3.2.36 IBMDSwitcherHyperDeck::SetAutoRollOnTakeFrameDelay method

The **SetAutoRollOnTakeFrameDelay** method sets the automatic playback on tally state frame delay of the HyperDeck interface.

Syntax

```
HRESULT    SetAutoRollOnTakeFrameDelay (uint16_t frameDelay);
```

Parameters

Name	Direction	Description
autoRollOnTake	in	New automatic roll on take frame delay.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.37 IBMDSwitcherHyperDeck::GetNetworkAddress method

The **GetNetworkAddress** method retrieves the current remote device network address of the HyperDeck interface. This is expressed as a packed IPv4 address, least significant byte first.

Syntax

```
HRESULT     GetNetworkAddress (uint32_t* networkAddress);
```

Parameters

Name	Direction	Description
networkAddress	out	Currently set remote network IP address of the device.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The networkAddress parameter is invalid.

10.3.2.38 IBMDSwitcherHyperDeck::SetNetworkAddress method

The **SetNetworkAddress** method sets the remote device network address of the HyperDeck interface. This is expressed as a packed IPv4 address, least significant byte first.

The switcher will continuously attempt to connect to the device at the configured network address. To disable the HyperDeck interface and suppress connection attempts from the switcher, set this to an address of zero.

Syntax

```
HRESULT     SetNetworkAddress (uint32_t networkAddress);
```

Parameters

Name	Direction	Description
networkAddress	in	New remote network IP address of the device.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.2.39 IBMDSwitcherHyperDeck::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherHyperDeck** object.

Pass an object implementing the **IBMDSwitcherHyperDeckCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherHyperDeckCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the in **IBMDSwitcherHyperDeckCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

10.3.2.40 IBMDSwitcherHyperDeck::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherHyperDeckCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherHyperDeckCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

10.3.3 IBMDSwitcherHyperDeckCallback Interface

The **IBMDSwitcherHyperDeckCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherHyperDeck** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcherHyperDeck	IID_IBMDSwitcherHyperDeck	An **IBMDSwitcherHyperDeckCallback** object interface is installed with **IBMDSwitcherHyperDeck::AddCallback** and removed with **IBMDSwitcherHyperDeck::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
NotifyError	Called when an error occurs.

10.3.3.1 IBMDSwitcherHyperDeckCallback::Notify method

The Notify method is called when **IBMDSwitcherHyperDeck** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    RemoveCallback (IBMDSwitcherHyperDeckCallback* callback);
```

Parameters

Name	Direction	Description
eventType	out	**BMDSwitcherHyperDeckEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.3.2 IBMDSwitcherHyperDeckCallback::NotifyError method

The NotifyError method is called when **IBMDSwitcherHyperDeck** error events occur.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    NotifyError (BMDSwitcherHyperDeckErrorType errorType);
```

Parameters

Name	Direction	Description
errorType	out	**BMDSwitcherHyperDeckErrorType** that describes the type of error that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

10.3.4 IBMDSwitcherHyperDeckClipIterator Interface

The **IBMDSwitcherHyperDeckClipIterator** is used to enumerate the available clips in a connected HyperDeck.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcherHyperDeck	IID_IBMDSwitcherHype rDeck	**IBMDSwitcherHyperDeck::CreateIterator** can return an **IBMDSwitcherHyperDeckClipIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherHyperDeckClip** object interface.
GetById	Returns a specific **IBMDSwitcherHyperDeckClip** object by its clip ID.

10.3.4.1 IBMDSwitcherHyperDeckClipIterator::Next method

The **Next** method returns the next available **IBMDSwitcherHyperDeckClip** object interface.

Syntax

```
HRESULT    Next (IBMDSwitcherHyperDeckClip** clip);
```

Parameters

Name	Direction	Description
clip	out	**IBMDSwitcherHyperDeckClip** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherHyperDeckClip** objects available.
E_POINTER	The clip parameter is invalid.

10.3.4.2 IBMDSwitcherHyperDeckClipIterator::GetById method

The **GetById** method returns the **IBMDSwitcherHyperDeckClip** object interface that matches the given clip ID.

Syntax

```
HRESULT    GetById (BMDSwitcherHyperDeckClipId clipId, IBMDSwitcherHyperDeckClip** clip);
```

Parameters

Name	Direction	Description
clipId	in	**BMDSwitcherHyperDeckClipId** clip to retrieve.
clip	out	**IBMDSwitcherHyperDeckClip** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The requested clip was not found.
E_POINTER	The clip parameter is invalid.

10.3.5 IBMDSwitcherHyperDeckClip Interface

The **IBMDSwitcherHyperDeckClip** object interface provides information about a single clip in a Blackmagic Design HyperDeck device.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcherHyperDeckClipIterator	IID_IBMDSwitcherHyperDeckClipIterator	An **IBMDSwitcherHyperDeckClip** object will be returned after a successful call to **IBMDSwitcherHyperDeckClipIterator::Next** method.

Public Member Functions	
Method	**Description**
IsValid	Returns whether this clip entry is still valid, or has been permanently invalidated.
IsInfoAvailable	Returns whether the clip data has been successfully retrieved at this stage.
GetId	Get the ID of the clip.
GetName	Get the name of the clip.
GetDuration	Get the duration timecode of the clip.
GetTimelineStart	Get the start of the clip timecode within the Hyperdeck's timeline.
GetTimelineEnd	Get the end of the clip timecode within the Hyperdeck's timeline.
AddCallback	Add a HyperDeck clip callback to receive property changes.
RemoveCallback	Remove a HyperDeck clip callback.

10.3.5.1 IBMDSwitcherHyperDeckClip::IsValid method

The **IsValid** method returns whether the clip entry has been permanently invalidated. Under certain circumstances (such as a media slot state change) the clip cache becomes invalidated, and all entries are recreated and repopulated from the HyperDeck.

Once a clip has become invalid it should be released and discarded, and a fresh version requested from the **IBMDSwitcherHyperDeckClipIterator** object.

Syntax

```
HRESULT    IsValid (boolean* isValid);
```

Parameters

Name	Direction	Description
isValid	out	Boolean value indicating if the clip's information is currently available.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The isValid parameter is invalid.

10.3.5.2 IBMDSwitcherHyperDeckClip::IsInfoAvailable method

The **IsInfoAvailable** method returns whether the information for this is currently populated. Clip information is retrieved asynchronously, thus clip entries may be created before their associated data becomes available.

Clips whose information is not currently populated may still have user callbacks registered via **AddCallback**.

Syntax

```
HRESULT    IsInfoAvailable (boolean* infoAvailable);
```

Parameters

Name	Direction	Description
infoAvailable	out	Boolean value indicating if the clip's information is current available.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The infoAvailable parameter is invalid.
E_FAIL	The clip is invalid.

10.3.5.3 IBMDSwitcherHyperDeckClip::GetId method

The **GetId** method returns the clip's ID, used to uniquely identify a clip in the clip cache.

Syntax

```
HRESULT    GetId (BMDSwitcherHyperDeckClipId* clipId);
```

Parameters

Name	Direction	Description
clipId	out	**BMDSwitcherHyperDeckClipId** clip identifier in the cache.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.
E_POINTER	The clipId parameter is invalid.

10.3.5.4 IBMDSwitcherHyperDeckClip::GetName method

The **GetName** method returns the clip's name, as returned by the HyperDeck.

Syntax

```
HRESULT    GetName (string* name);
```

Parameters

Name	Direction	Description
name	out	Clip name in the cache.

Return Values

Value	Description
S_OK	Success.
S_FALSE	The clip name is not yet available.
E_FAIL	The clip is invalid.
E_POINTER	The name parameter is invalid.

10.3.5.5 IBMDSwitcherHyperDeckClip::GetDuration method

The **GetDuration** method returns the clip's duration, as returned by the HyperDeck.

Syntax

```
HRESULT    GetDuration (uint16_t* hours, uint8_t* minutes, uint8_t* seconds,
           uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Clip duration, hours component.
minutes	out	Clip duration, minutes component.
seconds	out	Clip duration, seconds component.
frames	out	Clip duration, frames component.

Return Values

Value	Description
S_OK	Success.
S_FALSE	The clip duration is not yet available.
E_FAIL	The clip is invalid.
E_POINTER	The hours, minutes, seconds and/or frames parameter(s) are invalid.

10.3.5.6 IBMDSwitcherHyperDeckClip::GetTimelineStart method

The **GetTimelineStart** method returns the clip's start position within the entire timeline, as returned by the HyperDeck.

Syntax

```
HRESULT     GetTimelineStart (uint16_t* hours, uint8_t* minutes,
            uint8_t* seconds, uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Clip timeline start, hours component.
minutes	out	Clip timeline start, minutes component.
seconds	out	Clip timeline start, seconds component.
frames	out	Clip timeline start, frames component.

Return Values

Value	Description
S_OK	Success.
S_FALSE	The clip timeline start is not yet available.
E_FAIL	The clip is invalid.
E_POINTER	The hours, minutes, seconds and/or frames parameter(s) are invalid.

10.3.5.7 IBMDSwitcherHyperDeckClip::GetTimelineEnd method

The **GetTimelineEnd** method returns the clip's end position within the entire timeline, as returned by the HyperDeck.

Syntax

```
HRESULT     GetTimelineEnd (uint16_t* hours, uint8_t* minutes,
            uint8_t* seconds, uint8_t* frames);
```

Parameters

Name	Direction	Description
hours	out	Clip timeline end, hours component.
minutes	out	Clip timeline end, minutes component.
seconds	out	Clip timeline end, seconds component.
frames	out	Clip timeline end, frames component.

Return Values

Value	Description
S_OK	Success.
S_FALSE	The clip timeline start is not yet available.
E_FAIL	The clip is invalid.
E_POINTER	The hours, minutes, seconds and/or frames parameter(s) are invalid.

10.3.5.8 IBMDSwitcherHyperDeckClip::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherHyperDeckClip** object.

Pass an object implementing the **IBMDSwitcherHyperDeckClipCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback (IBMDSwitcherHyperDeckClipCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherHyperDeckClipCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

10.3.5.9 IBMDSwitcherHyperDeckClip::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback (IBMDSwitcherHyperDeckClipCallback* callback);
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherHyperDeckClipCallback** object interface.

Return Values

Value	Description
E_INVALIDARG	The callback parameter is invalid.
S_OK	Success.

10.3.6 IBMDSwitcherHyperDeckClipCallback Interface

The **IBMDSwitcherHyperDeckClipCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherHyperDeckClip** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
BMDSwitcherHyperDeckClip	IID_IBMDSwitcherHyperDeckClip	An **IBMDSwitcherHyperDeckClipCallback** object interface is installed with **IBMDSwitcherHyperDeckClip::AddCallback** and removed with **IBMDSwitcherHyperDeckClip::RemoveCallback**

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

10.3.6.1 IBMDSwitcherHyperDeckClipCallback::Notify method

The Notify method is called when **IBMDSwitcherHyperDeckClip** events occur, events such as a property change.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads.

Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify (BMDSwitcherHyperDeckClipEventType eventType,
           BMDSwitcherHyperDeckClipId clipId);
```

Parameters

Name	Direction	Description
eventType	out	**BMDSwitcherHyperDeckEventType** that describes the type of event that has occurred.
clipId	out	**BMDSwitcherHyperDeckClipId** identifier of the clip generating the notification.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 11 — Streaming

The Switcher Streaming API provides functionality to stream video over the internet to a streaming service such as YouTube, Twitch, or Facebook.

11.1 General Information

11.1.1 Video and Audio Encoding

The switcher will stream H.264 encoded video and AAC encoded audio via the RTMP streaming protocol to a selected streaming server. This requires that the switcher has access to an internet connection from its ethernet port.

11.2 Streaming Data Types

11.2.1 Streaming State

BMDSwitcherStreamRTMPState enumerates the possible streaming states.

- **bmdSwitcherStreamRTMPStateIdle**
  Not streaming.
- **bmdSwitcherStreamRTMPStateConnecting**
  Connecting to the streaming server.
- **bmdSwitcherStreamRTMPStateStreaming**
  Streaming is in progress.
- **bmdSwitcherStreamRTMPStateStopping**
  Streaming is stopping.

11.2.2 Streaming Error

BMDSwitcherStreamRTMPError enumerates the possible errors that can occur when streaming.

- **bmdSwitcherStreamRTMPErrorNone**
  No error.
- **bmdSwitcherStreamRTMPErrorInvalidState**
  Invalid state for requested command.
- **bmdSwitcherStreamRTMPErrorUnknown**
  Unknown error.

11.2.3 Streaming Event Type

BMDSwitcherStreamRTMPEventType enumerates the possible event types for the **IBMDSwitcherStreamRTMPCallback** object interface.

- **bmdSwitcherStreamRTMPEventTypeServiceNameChanged**
  The service name has changed.
- **bmdSwitcherStreamRTMPEventTypeUrlChanged**
  The server url has changed.
- **bmdSwitcherStreamRTMPEventTypeKeyChanged**
  The stream key has changed.
- **bmdSwitcherStreamRTMPEventTypeVideoBitratesChanged**
  The maximum video bitrates have changed.
- **bmdSwitcherStreamRTMPEventTypeAudioBitratesChanged**
  The maximum audio bitrates have changed.
- **bmdSwitcherStreamRTMPEventTypeEncodingBitrateChanged**
  The current encoding bitrate has changed.
- **bmdSwitcherStreamRTMPEventTypeCacheUsedChanged**
  The current usage level of the streaming cache has changed.
- **bmdSwitcherStreamRTMPEventTypeTimecodeChanged**
  The current streaming timecode has changed.
- **bmdSwitcherStreamRTMPEventTypeDurationChanged**
  The current streaming duration has changed.
- **bmdSwitcherStreamRTMPEventTypeAuthenticationChanged**
  The service authentication credentials have changed.
- **bmdSwitcherStreamRTMPEventTypeLowLatencyChanged**
  The low latency setting has changed.

11.3 Interface Reference

11.3.1 IBMDSwitcherStreamRTMP Interface

The **IBMDSwitcherStreamRTMP** object interface provides functionality to start and stop streaming of video and audio to a streaming server.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherStreamRTMP** object interface can be obtained with **IBMDSwitcher::QueryInterface**.

Public Member Functions	
Method	**Description**
StartStreaming	Start streaming.
StopStreaming	Stop streaming.
IsStreaming	Determine whether the switcher is currently streaming.
GetStatus	Get the current streaming status.
SetServiceName	Set the streaming service name.

Public Member Functions	
Method	**Description**
GetServiceName	Get the streaming service name.
SetUrl	Set the streaming URL.
GetUrl	Get the streaming URL.
SetKey	Set the streaming key.
GetKey	Get the streaming key.
SetVideoBitrates	Set the maximum video streaming bitrates.
GetVideoBitrates	Get the maximum video streaming bitrates.
SetAudioBitrates	Set the maximum audio streaming bitrates.
GetAudioBitrates	Get the maximum audio streaming bitrates.
RequestDuration	Request the current streaming duration and timecode from the switcher.
GetDuration	Get the cached streaming duration (in frames).
GetTimecode	Get the cached streaming timecode.
GetEncodingBitrate	Get the current encoding bitrate.
GetCacheUsed	Get the current usage level of the streaming cache.
SetAuthentication	Set the streaming authentication credentials.
GetAuthentication	Get the streaming authentication credentials.
SetLowLatency	Set the low latency flag.
GetLowLatency	Get the low latency flag.
AddCallback	Add a streaming callback.
RemoveCallback	Remove a streaming callback.

11.3.1.1 IBMDSwitcherStreamRTMP::StartStreaming method

The **StartStreaming** method starts video and audio streaming to the configured streaming server.

Syntax

```
HRESULT     StartStreaming()
```

Return Values

Value	Description
S_OK	Success.
S_FALSE	Already streaming.
E_FAIL	Failure.

11.3.1.2 IBMDSwitcherStreamRTMP::StopStreaming method

The **StopStreaming** method stops video and audio streaming to the configured streaming server.

Syntax

```
HRESULT     StopStreaming()
```

Return Values

Value	Description
S_OK	Success.
S_FALSE	Not currently streaming.
E_FAIL	Failure.

11.3.1.3 IBMDSwitcherStreamRTMP::IsStreaming method

The **IsStreaming** method is used to determine if the switcher is currently streaming.

Syntax

```
HRESULT     IsStreaming(Boolean* streaming)
```

Parameters

Name	Direction	Description
streaming	out	Boolean value indicating whether the switcher is currently streaming.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The streaming parameter is invalid.

11.3.1.4 IBMDSwitcherStreamRTMP::GetStatus method

The **GetStatus** method returns the current streaming status.

Syntax

```
HRESULT     GetStatus(BMDSwitcherStreamRTMPState* state,
            BMDSwitcherStreamRTMPError* error)
```

Parameters

Name	Direction	Description
state	out	**BMDSwitcherRecordAVState** value indicating the current streaming status.
error	out	**BMDSwitcherStreamRTMPError** value indicating the error associated with current streaming status.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

11.3.1.5 IBMDSwitcherStreamRTMP::SetServiceName method

The **SetServiceName** method sets the streaming service name. The name is only used for display purposes.

Syntax

```
HRESULT     SetServiceName(string serviceName)
```

Parameters

Name	Direction	Description
serviceName	in	Name of the streaming service.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.6 IBMDSwitcherStreamRTMP::GetServiceName method

The **GetServiceName** method gets the name of the streaming service.

Syntax

```
HRESULT     GetServiceName(string* serviceName)
```

Parameters

Name	Direction	Description
serviceName	out	Name of the streaming service.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The serviceName parameter is invalid.

11.3.1.7 IBMDSwitcherStreamRTMP::SetUrl method

The **SetUrl** method sets the streaming server URL.

Syntax

```
HRESULT     SetUrl(string url)
```

Parameters

Name	Direction	Description
url	in	Streaming server URL.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.8 IBMDSwitcherStreamRTMP::GetUrl method

The **GetUrl** method gets the streaming server URL.

Syntax

```
HRESULT     GetUrl(string* url)
```

Parameters

Name	Direction	Description
url	out	Streaming server URL.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The url parameter is invalid.

11.3.1.9 IBMDSwitcherStreamRTMP::SetKey method

The **SetKey** method sets the streaming server key.

Syntax

```
HRESULT     SetKey(string url)
```

Parameters

Name	Direction	Description
url	in	Streaming server key.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.10 IBMDSwitcherStreamRTMP::GetKey method

The **GetKey** method gets the streaming server key.

Syntax

```
HRESULT     GetKey(string* key)
```

Parameters

Name	Direction	Description
key	out	Streaming server key.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The key parameter is invalid.

11.3.1.11 IBMDSwitcherStreamRTMP::SetVideoBitrates

The **SetVideoBitrate** method sets the maximum video streaming bitrates, in bits per second. The low bitrate is used for framerates of 30p and lower. The high bitrate is used for framerates of p50 and higher.

Syntax

```
HRESULT     SetVideoBitrates(uint32_t lowBitrate, uint32_t highBitrate)
```

Parameters

Name	Direction	Description
lowBitrate	in	Maximum video streaming bitrate for low framerates, in bits per second.
highBitrate	in	Maximum video streaming bitrate for high framerates, in bits per second.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.12 IBMDSwitcherStreamRTMP::GetVideoBitrates

The **GetVideoBitrate** method gets the current maximum video streaming bitrates, in bits per second. The low bitrate is used for framerates of 30p and lower. The high bitrate is used for framerates of p50 and higher.

Syntax

```
HRESULT    GetVideoBitrates(uint32_t* lowBitRate, uint32_t* highBitRate)
```

Parameters

Name	Direction	Description
lowBitRate	out	Maximum video streaming bitrate for low framerates, in bits per second.
highBitRate	out	Maximum video streaming bitrate for high framerates, in bits per second.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

11.3.1.13 IBMDSwitcherStreamRTMP::SetAudioBitrates method

The **SetAudioBitrate** method sets the maximum audio streaming bitrates, in bits per second. The low bitrate is used for framerates of 30p and lower. The high bitrate is used for framerates of p50 and higher.

Syntax

```
HRESULT    SetAudioBitrates(uint32_t lowBitrate, uint32_t highBitrate)
```

Parameters

Name	Direction	Description
lowBitrate	in	Maximum audio streaming bitrate for low framerates, in bits per second.
highBitrate	in	Maximum audio streaming bitrate for high framerates, in bits per second.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.14 IBMDSwitcherStreamRTMP::GetAudioBitrates method

The **GetAudioBitrate** method gets the current maximum audio streaming bitrates, in bits per second. The low bitrate is used for framerates of 30p and lower. The high bitrate is used for framerates of p50 and higher.

Syntax

```
HRESULT    GetAudioBitrates(uint32_t* lowBitRate, uint32_t* highBitRate)
```

Parameters

Name	Direction	Description
lowBitRate	out	Maximum audio streaming bitrate for low framerates, in bits per second.
highBitRate	out	Maximum audio streaming bitrate for high framerates, in bits per second.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

11.3.1.15 IBMDSwitcherStreamRTMP::RequestDuration method

The **RequestDuration** method requests the current streaming duration and timecode from the switcher which will be cached when received. Use the **GetDuration** and **GetTimecode** methods to get the cached duration and cached timecode, respectively.

Syntax

```
HRESULT    RequestDuration()
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.16 IBMDSwitcherStreamRTMP::GetDuration method

The **GetDuration** method returns the streaming duration (in frames) that was last received from the switcher.

Syntax

```
HRESULT     GetDuration(uint64_t* duration);
```

Parameters

Name	Direction	Description
duration	out	Recording duration (in frames).

Return Values

Value	Description
S_OK	Success.
E_POINTER	The duration parameter is invalid.

11.3.1.17 IBMDSwitcherStreamRTMP::GetTimecode method

The **GetTimecode** method returns the streaming timecode that was last received from the switcher.

Syntax

```
HRESULT     GetTimecode(uint8_t* hours, uint8_t* minutes, uint8_t* seconds,
            uint8_t* frames, Boolean* dropFrame);
```

Parameters

Name	Direction	Description
hours	out	The hours value of the timecode.
minutes	out	The minutes value of the timecode.
seconds	out	The seconds value of the timecode.
frames	out	The frames value of the timecode.
dropFrame	out	Whether the timecode is drop frame.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

11.3.1.18 IBMDSwitcherStreamRTMP::GetTimecode method

The **GetEncodingBitrate** method returns the current encoding bitrate, in bits per second.

Syntax

```
HRESULT    GetEncodingBitrate(uint32_t* encodingBitrate)
```

Parameters

Name	Direction	Description
encodingBitrate	out	The current encoding bitrate.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The encodingBitrate parameter is invalid.

11.3.1.19 IBMDSwitcherStreamRTMP::GetCacheUsed method

The **GetCacheUsed** method returns the current usage level of the streaming cache, as a percentage.

Syntax

```
HRESULT    GetCacheUsed(double* cacheUsed)
```

Parameters

Name	Direction	Description
cacheUsed	out	Percentage of the current usage level of the streaming cache.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The cacheUsed parameter is invalid.

11.3.1.20 IBMDSwitcherStreamRTMP::SetAuthentication method

The **SetAuthentication** method sets the streaming server authentication credentials.

Syntax

```
HRESULT    SetAuthentication(string username, string password)
```

Parameters

Name	Direction	Description
username	in	Streaming server authentication username.
password	in	Streaming server authentication password.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.21 IBMDSwitcherStreamRTMP::GetAuthentication method

The **GetAuthentication** method gets the streaming server authentication credentials.

Syntax

```
HRESULT    GetAuthentication(string* username, string* password)
```

Parameters

Name	Direction	Description
username	out	Streaming server authentication username.
password	out	Streaming server authentication password.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The username and/or password parameters are invalid.

11.3.1.22 IBMDSwitcherStreamRTMP::SetLowLatency method

The **SetLowLatency** method changes the low latency mode. If low latency is enabled, frames will be dropped during times of poor network performance to prevent the stream from lagging too far behind the live output of the switcher. This flag can only be changed when the switcher is not recording.

Syntax

```
HRESULT    SetLowLatency(Boolean lowLatency)
```

Parameters

Name	Direction	Description
lowLatency	in	Boolean value indicating whether low latency is active.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.1.23 IBMDSwitcherStreamRTMP::GetLowLatency method

The **GetLowLatency** method returns the low latency mode.

Syntax

```
HRESULT    GetLowLatency(Boolean* lowLatency)
```

Parameters

Name	Direction	Description
lowLatency	out	Boolean value indicating whether low latency is active.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The lowLatency parameter is invalid.

11.3.1.24 IBMDSwitcherStreamRTMP::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherStreamRTMP** object. Pass an object implementing the **IBMDSwitcherStreamRTMPCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT    AddCallback(IBMDSwitcherStreamRTMPCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStreamRTMPCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

11.3.1.25 IBMDSwitcherStreamRTMP::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherStreamRTMPCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherStreamRTMPCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

11.3.2 IBMDSwitcherStreamRTMPCallback Interface

The **IBMDSwitcherStreamRTMPCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherStreamRTMP** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherStreamRTMP	IID_IBMDSwitcherStreamRTMP	An **IBMDSwitcherStreamRTMPCallback** object interface is installed with **IBMDSwitcherStreamRTMP::AddCallback** and removed with **IBMDSwitcherStreamRTMP::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
NotifyStatus	Called when the streaming status changes.

11.3.2.1 IBMDSwitcherStreamRTMPCallback::Notify method

The **Notify** method is called when **IBMDSwitcherStreamRTMP** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherStreamRTMPEventType eventType)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherStreamRTMPEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

11.3.2.2 IBMDSwitcherStreamRTMPCallback::NotifyStatus method Interface

The **NotifyStatus** method is called when the streaming status has changed.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    NotifyStatus(BMDSwitcherStreamRTMPState stateType,
           BMDSwitcherStreamRTMPError error)
```

Parameters

Name	Direction	Description
stateType	in	**BMDSwitcherStreamRTMPState** that describes the current streaming state.
error	in	**BMDSwitcherStreamRTMPError** of the error associated with the current streaming state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

Section 12 — Recording

The Recording API provides functionality to record video and audio from the switcher.

12.1 General Information

12.1.1 Video and Audio Encoding

Recordings from the switcher are stored as H.264 video and AAC audio in MP4 file format onto any externally connected disk (USB disk. flash drive, or Blackmagic Design MultiDock).

12.1.2 Working Set of Disks

The switcher maintains a working set of two disks. By default, this will be the two connected disks (USB disks or flash drives) with the largest available capacity. One of these will be designated as the **active** disk. The active disk is the one that will be, or is currently being, used for recording. The other disk (non active disk) will be a spill disk, which will be used for recording when the active disk is filled, or if **IBMDSwitcherRecordAV::SwitchDisk** is called. The working set can be changed by calling **IBMDSwitcherRecordAV::SetWorkingSetDisk**.

12.2 Recording Data Types

12.2.1 Recording State

BMDSwitcherRecordAVState enumerates the possible recording states.

- **bmdSwitcherRecordAVStateIdle**
  Not recording.
- **bmdSwitcherRecordAVStateRecording**
  Recording is in progress.
- **bmdSwitcherRecordAVStateStopping**
  Recording is stopping.

12.2.2 Recording Error

BMDSwitcherRecordAVError enumerates the possible errors that can occur when recording.

- **bmdSwitcherRecordAVErrorNone**
  No error
- **bmdSwitcherRecordAVErrorNoMedia**
  Invalid disk or no disk.
- **bmdSwitcherRecordAVErrorMediaFull**
  No space available on any disk.
- **bmdSwitcherRecordAVErrorMediaError**
  Disk error.
- **bmdSwitcherRecordAVErrorMediaUnformatted**
  Disk is not formatted.
- **bmdSwitcherRecordAVErrorDroppingFrames**
  Frames dropped while recording.
- **bmdSwitcherRecordAVErrorUnknown**
  Unknown error.

12.2.3 Recording Disk Status

BMDSwitcherRecordDiskStatus enumerates the possible recording disk statuses.

- **bmdSwitcherRecordDiskIdle**
  Disk is currently not in use.
- **bmdSwitcherRecordDiskUnformatted**
  Disk is not formatted.
- **bmdSwitcherRecordDiskActive**
  Disk is part of the working set.
- **bmdSwitcherRecordDiskRecording**
  Disk is currently being recorded to.

12.2.4 Recording Event Type

BMDSwitcherRecordAVEventType enumerates the possible event types for the **IBMDSwitcherRecordAVCallback** object interface.

- **bmdSwitcherRecordAVEventTypeFilenameChanged**
  The recording filename has changed.
- **bmdSwitcherRecordAVEventTypeRecordInAllCamerasChanged**
  The Record in all Cameras state has changed.
- **bmdSwitcherRecordAVEventTypeTimecodeChanged**
  Current recording timecode has changed.
- **bmdSwitcherRecordAVEventTypeDurationChanged**
  Current recording duration has changed.
- **bmdSwitcherRecordAVEventTypeActiveDiskIndexChanged**
  The currently active disk index has changed.
- **bmdSwitcherRecordAVEventTypeTotalRecordingTimeAvailableChanged**
  The combined recording time available on all connected disks has changed.
- **bmdSwitcherRecordAVEventTypeRecordAllISOInputsChanged**
  The Record all ISO Inputs state has changed.

12.2.5 Recording Disk Availability Event Type

BMDSwitcherRecordDiskAvailabilityEventType enumerates the possible disk availability event types for the **IBMDSwitcherRecordAVCallback** object interface.

- **bmdSwitcherRecordDiskAvailabilityEventTypeAvailable**
  A disk has become available.
- **bmdSwitcherRecordDiskAvailabilityEventTypeRemoved**
  A disk is no longer available.

12.2.6 Recording Disk Event Type

BMDSwitcherRecordDiskEventType enumerates the possible event types for the **IBMDSwitcherRecordDiskCallback** object interface.

- **bmdSwitcherRecordDiskEventTypeStatusChanged**
  The disk status has changed.
- **bmdSwitcherRecordDiskEventTypeRecordingTimeAvailableChanged**
  The remaining recording time on the disk has changed.
- **bmdSwitcherRecordDiskEventTypeVolumeNameChanged**
  The disk volume name has changed.

12.3 Interface Reference

12.3.1 IBMDSwitcherRecordAV Interface

The **IBMDSwitcherRecordAV** object interface provides functionality to start and stop recording of video and audio to externally connected disks.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcher	IID_IBMDSwitcher	An **IBMDSwitcherRecordAV** object interface can be obtained with **IBMDSwitcher::QueryInterface**.

Public Member Functions	
Method	**Description**
StartRecording	Start recording.
StopRecording	Stop recording.
SwitchDisk	Switch recording to the next disk.
IsRecording	Determine whether the switcher is currently recording.
GetStatus	Get the current recording status.
SetFilename	Set the recording file name.
GetFilename	Get the recording file name.
SetRecordInAllCameras	Set the record in all cameras flag.
GetRecordInAllCameras	Get the record in all cameras flag.
DoesSupportISORecording	Determine if recording ISO inputs is supported by the switcher.
SetRecordAllISOInputs	Set the record all ISO inputs flag.
GetRecordAllISOInputs	Get the record all ISO inputs flag.
GetWorkingSetLimit	Get the maximum number of disks that can be in the working set.
SetWorkingSetDisk	Set a disk in the the working set.
GetWorkingSetDisk	Get the ID of a disk in the working set.
GetActiveDiskIndex	Get the index of the active disk.
RequestDuration	Request the current recording duration and timecode from the switcher.
GetDuration	Get the cached recording duration (in frames).
GetTimecode	Get the cached recording timecode.
GetTotalRecordingTimeAvailable	Get the total available recording time.
CreateIterator	Create an iterator.
AddCallback	Add a recording callback.
RemoveCallback	Remove a recording callback.

12.3.1.1 IBMDSwitcherRecordAV::StartRecording method

The **StartRecording** method starts recording video and audio to disk.

Syntax

```
HRESULT     StartRecording()
```

Return Values

Value	Description
S_OK	Success.
S_FALSE	Already recording.
E_FAIL	Failure.

12.3.1.2 IBMDSwitcherRecordAV::StopRecording method

The **StopRecording** method stops the current recording.

Syntax

```
HRESULT     StopRecording()
```

Return Values

Value	Description
S_OK	Success.
S_FALSE	Not currently recording.
E_FAIL	Failure.

12.3.1.3 IBMDSwitcherRecordAV::SwitchDisk method

The **SwitchDisk** method stops recording to the current disk and continues recording to the next disk, if there is one available.

Syntax

```
HRESULT     SwitchDisk()
```

Return Values

Value	Description
S_OK	Success.
S_FALSE	Not currently recording.
E_FAIL	Failure.

12.3.1.4 IBMDSwitcherRecordAV::IsRecording method

The **IsRecording** method determines if the switcher is currently recording.

Syntax

```
HRESULT    IsRecording(Boolean* recording)
```

Parameters

Name	Direction	Description
recording	out	Boolean value indicating whether the switcher is currently recording.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The recording parameter is invalid.

12.3.1.5 IBMDSwitcherRecordAV::GetStatus method

The **GetStatus** method returns the current recording status

Syntax

```
HRESULT    GetStatus(BMDSwitcherRecordAVState* state,
           BMDSwitcherRecordAVError* error)
```

Parameters

Name	Direction	Description
state	out	**BMDSwitcherRecordAVState** value indicating the current recording status.
error	out	**BMDSwitcherRecordAVError** value indicating the error associated with current recording status.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

12.3.1.6 IBMDSwitcherRecordAV::SetFilename method

The **SetFilename** method sets the base file name for recording. Any file extension will be ignored.

Syntax

```
HRESULT     SetFilename(string filename)
```

Parameters

Name	Direction	Description
filename	in	Base name of the recording file.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.1.7 IBMDSwitcherRecordAV::GetFilename method

The **GetFilename** method gets the base file name for recording.

Syntax

```
HRESULT     GetFilename(string* filename)
```

Parameters

Name	Direction	Description
filename	out	Base name of recording file.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure
E_POINTER	The filename parameter is invalid.

12.3.1.8 IBMDSwitcherRecordAV::SetRecordInAllCameras method

The **SetRecordInAllCameras** method changes the record in all cameras flag. If the switcher is currently recording, any connected Blackmagic Design cameras will immediately start or stop recording based on the **recordInAllCameras** flag. If the switcher is not recording, the recordInAllCameras flag will be used next time recording is started.

Syntax

```
HRESULT     SetRecordInAllCameras(Boolean recordInAllCameras)
```

Parameters

Name	Direction	Description
recordInAllCameras	in	Boolean value indicating whether record in all cameras flag is active.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.1.9 IBMDSwitcherRecordAV::GetRecordInAllCameras method

The **GetRecordInAllCameras** method returns the record in all cameras flag.

Syntax

```
HRESULT     GetRecordInAllCameras(Boolean* recordInAllCameras)
```

Parameters

Name	Direction	Description
recordInAllCameras	out	Boolean value indicating whether record in all cameras flag is active.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The recordInAllCameras parameter is invalid.

12.3.1.10 IBMDSwitcherRecordAV::DoesSupportISORecording method

The **DoesSupportISORecording** method determines if ISO recording is supported by the switcher.

Syntax

```
HRESULT    DoesSupportISORecording(Boolean* supportsISORecording)
```

Parameters

Name	Direction	Description
supportsISORecording	out	Boolean value describing whether ISO recording is supported by the switcher.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The supportsISORecording parameter is invalid.

12.3.1.11 IBMDSwitcherRecordAV::SetRecordAllISOInputs method

The **SetRecordAllISOInputs** method changes the record all ISO inputs flag. This flag can only be changed when the switcher is not recording and will be used next time recording is started.

Syntax

```
HRESULT    SetRecordAllISOInputs(Boolean recordAllISOInputs)
```

Parameters

Name	Direction	Description
recordAllISOInputs	in	Boolean value indicating whether record all ISO inputs flag is active.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Feature not supported on this model, or media currently recording.

12.3.1.12 IBMDSwitcherRecordAV::GetRecordAllISOInputs method

The **GetRecordAllISOInputs** method returns the record all ISO inputs flag.

Syntax

```
HRESULT    GetRecordAllISOInputs(Boolean* recordAllISOInputs)
```

Parameters

Name	Direction	Description
recordAllISOInputs	out	Boolean value indicating whether record all ISO inputs flag is active.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Feature not supported on this model.
E_POINTER	The recordAllISOInputs parameter is invalid.

12.3.1.13 IBMDSwitcherRecordAV::GetWorkingSetLimit method

The **GetWorkingSetLimit** method returns the maximum number of disks that can be added to the working set.

Syntax

```
HRESULT    GetWorkingSetLimit(uint32_t* workingSetLimit)
```

Parameters

Name	Direction	Description
workingSetLimit	out	Number of disks in the working set.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The workingSetLimit parameter is invalid.

12.3.1.14 IBMDSwitcherRecordAV::SetWorkingSetDisk method

The **SetWorkingDisk** method adds the specified disk to the working set at the specified index.

Syntax

```
HRESULT     SetWorkingSetDisk(uint32_t workingSetIndex,
            BMDSwitcherRecordDiskId diskId)
```

Parameters

Name	Direction	Description
workingSetIndex	in	Zero based index into the working set.
diskId	in	**BMDSwitcherRecordDiskId** of the disk.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The workingSetIndex parameter is out of range.
E_FAIL	Failure.

12.3.1.15 IBMDSwitcherRecordAV::GetWorkingSetDisk method

The **GetWorkingDisk** method gets the ID of the disk at the specified index in the working set.

Syntax

```
HRESULT     GetWorkingSetDisk(uint32_t workingSetIndex,
            BMDSwitcherRecordDiskId* diskId)
```

Parameters

Name	Direction	Description
workingSetIndex	in	Zero based index into the working set
diskId	out	**BMDSwitcherRecordDiskId** of the disk.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The workingSetIndex parameter is out of range.
E_POINTER	The diskId parameter is invalid.
E_FAIL	Failure.

12.3.1.16 IBMDSwitcherRecordAV::GetActiveDiskIndex method

The **GetActiveDisk** method returns the index of the currently active disk in the working set.

Syntax

```
HRESULT     GetActiveDiskIndex(uint32_t* workingSetIndex)
```

Parameters

Name	Direction	Description
workingSetIndex	out	Zero based index into the working set.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The workingSetIndex parameter is invalid.

12.3.1.17 IBMDSwitcherRecordAV::RequestDuration method

The **RequestDuration** method requests the current recording duration and timecode from the switcher which will be cached when received. Use the **GetDuration** and **GetTimeCode** methods to get the cached duration and cached timecode, respectively.

Syntax

```
HRESULT     RequestDuration()
```

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.1.18 IBMDSwitcherRecordAV::GetDuration method

The **GetDuration** method returns the recording duration (in frames) that was last received from the switcher.

Syntax

```
HRESULT     GetDuration(uint64_t* duration);
```

Parameters

Name	Direction	Description
duration	out	Recording duration (in frames).

Return Values

Value	Description
S_OK	Success.
E_POINTER	The duration parameter is invalid.

12.3.1.19 IBMDSwitcherRecordAV::GetTimecode method

The **GetTimecode** method returns the recording timecode that was last received from the switcher.

Syntax

```
HRESULT     GetTimecode(uint8_t* hours, uint8_t* minutes, uint8_t* seconds,
            uint8_t* frames, Boolean* dropFrame);
```

Parameters

Name	Direction	Description
hours	out	The hours value of the timecode.
minutes	out	The minutes value of the timecode.
seconds	out	The seconds value of the timecode.
frames	out	The frames value of the timecode.
dropFrame	out	Whether the timecode is drop frame.

Return Values

Value	Description
S_OK	Success.
E_POINTER	A parameter is invalid.

12.3.1.20 IBMDSwitcherRecordAV::GetTotalRecordingTimeAvailable method

The **GetTotalRecordingTimeAvailable** method returns the total recording time available across all externally connected disks..

Syntax

```
HRESULT    GetTotalRecordingTimeAvailable(uint32_t* totalRecordingTimeAvailable)
```

Parameters

Name	Direction	Description
totalRecordingTimeAvailable	out	Total recording time available across all disks.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The totalRecordingTimeAvailable parameter is invalid.

12.3.1.21 IBMDSwitcherRecordAV::CreateIterator method

The **CreateIterator** method creates an iterator object interface for the specified interface ID.

Syntax

```
HRESULT    CreateIterator(REFIID iid, LPVOID* ppv)
```

Parameters

Name	Direction	Description
iid	in	Iterator Interface ID to create an iterator for.
ppv	out	Pointer to returned interface object.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The ppv parameter is invalid.
E_OUTOFMEMORY	Insufficient memory to create interface object.
E_NOINTERFACE	Interface was not found.
E_FAIL	Failure.

12.3.1.22 IBMDSwitcherRecordAV::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherRecordAV** object. Pass an object implementing the **IBMDSwitcherRecordAVCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherRecordAVCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherRecordAVCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

12.3.1.23 IBMDSwitcherRecordAV::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherRecordAVCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherRecordAVCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

12.3.2 IBMDSwitcherRecordAVCallback Interface

The **IBMDSwitcherRecordAVCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherRecordAV** object. Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherRecordAV	IID_IBMDSwitcherRecordAV	An **IBMDSwitcherRecordAVCallback** object interface is installed with **IBMDSwitcherRecordAV::AddCallback** and removed with **IBMDSwitcherRecordAV::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.
NotifyWorkingSetChange	Called when the working set changes.
NotifyDiskAvailability	Called when disk availability changes.
NotifyStatus	Called when the recording status changes.

12.3.2.1 IBMDSwitcherRecordAVCallback::Notify method

The **Notify** method is called when **IBMDSwitcherRecordAV** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherRecordAVEventType eventType)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherRecordAVEventType** that describes the type of event that has occurred.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.2.2 IBMDSwitcherRecordAVCallback::NotifyWorkingSetChange method

The **NotifyWorkingSetChange** method is called when a disk in the working set has changed.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    NotifyWorkingSetChange(uint32_t workingSetIndex,
           BMDSwitcherRecordDiskId diskId)
```

Parameters

Name	Direction	Description
workingSetIndex	in	Working set index that has changed.
diskId	in	**BMDSwitcherRecordDiskId** of the disk associated with the working set change. A value of 0xFFFFFFFF means that no valid disk is present.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.2.3 IBMDSwitcherRecordAVCallback::NotifyDiskAvailability method

The **NotifyDiskAvailability** method is called when the availability of a disk has changed.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    NotifyDiskAvailability(BMDSwitcherRecordDiskAvailabilityEventType eventType,
           BMDSwitcherRecordDiskId diskId)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherRecordDiskAvailabilityEventType** that describes the type of event that has occurred.
diskId	in	**BMDSwitcherRecordDiskId** of the disk associated with the availability change.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.2.4 IBMDSwitcherRecordAVCallback::NotifyStatus method

The **NotifyStatus** method is called when the recording status has changed.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    NotifyStatus(BMDSwitcherRecordAVState stateType,
           BMDSwitcherRecordAVError error)
```

Parameters

Name	Direction	Description
stateType	in	**BMDSwitcherRecordAVState** that describes the current recording state.
error	in	**BMDSwitcherRecordAVError** of the error associated with the current recording state.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.

12.3.3 IBMDSwitcherRecordDiskIterator Interface

The **IBMDSwitcherRecordDiskIterator** is used to enumerate the disks connected to the Switcher.

A reference to an **IBMDSwitcherDiskRecordIterator** object interface may be obtained from an **IBMDSwitcherRecordAV** object interface using the **CreateIterator** method.
Pass **IID_IBMDSwitcherRecordDiskIterator** for the IID parameter.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherRecordAV	IID_IBMDSwitcherRecordAV	**IBMDSwitcherRecordAV::CreateIterator** can return an **IBMDSwitcherRecordDiskIterator** object interface.

Public Member Functions	
Method	**Description**
Next	Returns a pointer to the next **IBMDSwitcherRecordDisk** object interface.
GetById	Returns a pointer to an **IBMDSwitcherRecorder** object interface, given its **BMDSwitcherRecordDiskId**.

12.3.3.1 IBMDSwitcherRecordDiskIterator::Next method

The **Next** method returns the next available **IBMDSwitcherRecordDisk** object interface.

Syntax

```
HRESULT    Next(IBMDSwitcherRecordDisk** recordDisk)
```

Parameters

Name	Direction	Description
recordDisk	out	**IBMDSwitcherRecordDisk** object interface.

Return Values

Value	Description
S_OK	Success.
S_FALSE	No more **IBMDSwitcherRecordDisk** objects available.
E_POINTER	The recordDisk parameter is invalid.

12.3.3.2 IBMDSwitcherRecordDiskIterator::GetById method

The **GetById** method returns a pointer to an **IBMDSwitcherRecordDisk** object interface, given its **BMDSwitcherRecordDiskId**.

Syntax

```
HRESULT    GetById(BMDSwitcherRecordDiskId diskId, IBMDSwitcherRecordDisk** disk)
```

Parameters

Name	Direction	Description
diskId	in	**BMDSwitcherRecordDiskId** identifier.
disk	out	**IBMDSwitcherRecordDisk** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The diskId is not a valid identifier.
E_POINTER	The disk parameter is invalid.

12.3.4 IBMDSwitcherRecordDisk Interface

The **IBMDSwitcherRecordDisk** object interface provides access to information about externally connected disks.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherRecordDiskIterator	IID_IBMDSwitcherRecordDiskIterator	An **IBMDSwitcherRecordDisk** object interface will be returned after a successful call to **IBMDSwitcherRecordDiskIterator::Next** and **IBMDSwitcherRecordDiskIterator::GetById** methods.

Public Member Functions	
Method	**Description**
GetId	Get the ID of this **IBMDSwitcherRecordDisk** interface.
GetVolumeName	Get the volume name.
GetRecordingTimeAvailable	Get the available recording time.
GetStatus	Get the current status.
AddCallback	Add a record disk callback.
RemoveCallback	Remove a record disk callback.

12.3.4.1 IBMDSwitcherRecordDisk::GetId method

The **GetId** method returns the disk's ID, used to uniquely identify a disk within the switcher.

Syntax

```
HRESULT    GetId(BMDSwitcherRecordDiskId* diskId)
```

Parameters

Name	Direction	Description
diskId	out	**BMDSwitcherRecordDiskId** identifier for the current disk.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The diskId parameter is invalid.

12.3.4.2 IBMDSwitcherRecordDisk::GetVolumeName method

The **GetVolumeName** method returns the volume name of the disk.

Syntax

```
HRESULT    GetVolumeName(string* volumeName)
```

Parameters

Name	Direction	Description
volumeName	out	The volume name of the disk.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The volumeName parameter is invalid.
E_FAIL	Failure.

12.3.4.3 IBMDSwitcherRecordDisk::GetRecordingTimeAvailable method

The **GetRecordingTimeAvailable** method returns the available recording time for the disk. The available recording time is calculated from the configured bitrate properties.

Syntax

```
HRESULT    GetRecordingTimeAvailable(uint32_t* recordingTimeAvailable)
```

Parameters

Name	Direction	Description
recordingTimeAvailable	out	The available recording time of the disk.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The recordingTimeAvailable parameter is invalid.

12.3.4.4 IBMDSwitcherRecordDisk::GetStatus method

The **GetStatus** method returns the current status of the disk.

Syntax

```
HRESULT     GetStatus(BMDSwitcherRecordDiskStatus* diskStatus)
```

Parameters

Name	Direction	Description
diskStatus	out	The current status of the disk.

Return Values

Value	Description
S_OK	Success.
E_POINTER	The diskStatus parameter is invalid.

12.3.4.5 IBMDSwitcherRecordDisk::AddCallback method

The **AddCallback** method configures a callback to be called when events occur for an **IBMDSwitcherRecordDisk** object. Pass an object implementing the **IBMDSwitcherRecordDiskCallback** interface to receive callbacks. Adding a new callback will not affect previously added callbacks.

Syntax

```
HRESULT     AddCallback(IBMDSwitcherRecordDiskCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherRecordDiskCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

12.3.4.6 IBMDSwitcherRecordDisk::RemoveCallback method

The **RemoveCallback** method removes a previously installed callback.

Syntax

```
HRESULT     RemoveCallback(IBMDSwitcherRecordDiskCallback* callback)
```

Parameters

Name	Direction	Description
callback	in	Callback object implementing the **IBMDSwitcherRecordDiskCallback** object interface.

Return Values

Value	Description
S_OK	Success.
E_INVALIDARG	The callback parameter is invalid.

12.3.5 IBMDSwitcherRecordDiskCallback Interface

The **IBMDSwitcherRecordDiskCallback** object interface is a callback class containing methods that are called when an event occurs on an **IBMDSwitcherRecordDisk** object.

Like all callback methods, these callback methods may be called from another thread.

Related Interfaces

Interface	Interface ID	Description
IBMDSwitcherRecordDisk	IID_IBMDSwitcherRecordDisk	An **IBMDSwitcherRecordDiskCallback** object interface is installed with **IBMDSwitcherRecordDisk::AddCallback** and removed with **IBMDSwitcherRecordDisk::RemoveCallback**.

Public Member Functions	
Method	**Description**
Notify	Called when an event occurs.

12.3.5.1 IBMDSwitcherRecordDiskCallback::Notify method

The **Notify** method is called when **IBMDSwitcherRecordDisk** events occur, such as property changes.

This method is called from a separate thread created by the switcher SDK so care should be exercised when interacting with other threads. Callbacks should be processed as quickly as possible to avoid delaying other callbacks or affecting the connection to the switcher.

The return value (required by COM) is ignored by the caller.

Syntax

```
HRESULT    Notify(BMDSwitcherRecordDiskEventType eventType,
           BMDSwitcherRecordDiskId diskId)
```

Parameters

Name	Direction	Description
eventType	in	**BMDSwitcherRecordDiskEventType** that describes the type of event that has occurred.
diskId	in	**BMDSwitcherRecordDiskId** of the disk that has changed.

Return Values

Value	Description
S_OK	Success.
E_FAIL	Failure.