QTCaptureConnection Class Reference

Audio & Video

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Contents

QTCaptureConnection Class Reference 5

Overview 5
Tasks 6
  Getting and Setting Connection Attributes 6
Instance Methods 6
  attributeForKey: 6
  attributeIsReadOnly: 7
  connectionAttributes 7
  formatDescription 7
  isEnabled 8
  mediaType 8
  owner 8
  setAttribute:forKey: 9
  setConnectionAttributes: 9
  setEnabled: 9
Constants 10
  Audio Attributes 10
Notifications 11
  QTCaptureConnectionAttributeDidChangeNotification 11
  QTCaptureConnectionAttributeWillChangeNotification 11
  QTCaptureConnectionChangedAttributeKey 12
  QTCaptureConnectionFormatDescriptionDidChangeNotification 12
  QTCaptureConnectionFormatDescriptionWillChangeNotification 12

Document Revision History 13

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QTCaptureConnection Class Reference

Inherits from	NSObject
Conforms to	NSObject (NSObject)
Framework	/System/Library/Frameworks/QTKit.framework
Availability	Available in QuickTime 7.2.1 and later; QuickTime 7.2.1.
Declared in	QTCaptureConnection.h
Related sample code	AudioDataOutputToAudioUnit MyRecorder QTRecorder StillMotion

Overview

This class represents a connection over which a single stream of media data is sent from a `QTCaptureInput` to a `QTCaptureSession` and from a `QTCaptureSession` to a `QTCaptureOutput`.

Instances of `QTCaptureConnection` wrap individual media streams that can be provided by `QTCaptureInput` objects and received by `QTCaptureOutput` objects. Connections can have a QuickTime media type, such as `QTMediaTypeVideo` and `QTMediaTypeSound`, and a format description that describes the media sent or received across the connection. Individual connections belonging to an input can be enabled or disabled to restrict what media enters a capture session, while connections belonging to an output can be enabled or disabled to restrict what media enters the output from the capture session. In addition, if a `QTCaptureConnection` wraps a stream of audio media, it provides a number of attributes to control the volume, mix, and enabled channels of the audio passing through it.

`QTCaptureConnection` objects can have extended attributes that applications can read using the `attributeForKey:` and `connectionAttributes` methods. Some attributes, for which the `attributeIsReadOnly:` method returns `NO`, can be edited using the `setAttribute:forKey:` and `setConnectionAttributes:` methods. In addition to these explicit methods, applications can use key-value coding to get and set extended attributes. For an object that supports a given attribute, `valueForKey:` will be functionally identical to `attributeForKey:`, and `setValue:forKey:` will be identical to `setAttribute:forKey:`. Applications wishing to observe changes for a given attribute can add a key-value observer where the key path is the attribute key.

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Tasks

Getting and Setting Connection Attributes

- `attributeForKey:` (page 6)
  Returns the current value of the connection attribute for key.
- `attributeIsReadOnly:` (page 7)
  Returns a Boolean value indicating whether the given attribute for the connection cannot be modified.
- `connectionAttributes` (page 7)
  Returns a dictionary of all attributes set for the receiver.
- `formatDescription` (page 7)
  Returns the format description of the receiver.
- `isEnabled` (page 8)
  Returns a Boolean value indicating whether the receiver is enabled.
- `mediaType` (page 8)
  Returns the QuickTime media type of the receiver.
- `owner` (page 8)
  Returns the `QTCaptureInput` or `QTCaptureOutput` object that owns the receiver.
- `setAttribute:forKey:` (page 9)
  Sets a connection attribute for the given key.
- `setConnectionAttributes:` (page 9)
  Sets the connection's attributes from the key-value pairs specified in the given dictionary.
- `setEnabled:` (page 9)
  Sets whether the receiver is enabled.

Instance Methods

attributeForKey:

Returns the current value of the connection attribute for key.

```
- (id)attributeForKey:(NSString *)attributeKey
```

Discussion
Use this method to get attributes of a connection. The keys that can be used with this method are described in the Constants section. Applications using key-value coding can also get an attribute for a given key by passing that key to the `NSObject valueForKey:` method.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Related Sample Code
QTRecorder

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Declared In
`QTCaptureConnection.h`

attributeIsReadOnly:

Returns a Boolean value indicating whether the given attribute for the connection cannot be modified.

```
- (BOOL)attributeIsReadOnly:(NSString *)attributeKey
```

Return Value
Returns `YES` if the attribute cannot be modified; otherwise, `NO`.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

connectionAttributes

Returns a dictionary of all attributes set for the receiver.

```
- (NSDictionary *)connectionAttributes
```

Discussion
Applications can use this method to determine what attributes a specific connection supports.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

formatDescription

Returns the format description of the receiver.

```
- (QTFormatDescription *)formatDescription
```

Discussion
This method returns the format description of the connection, allowing applications to monitor various attributes of the media being sent or received by the connection (the display size of video media, for example). Applications can be notified of changes to the connection's format by registering to receive `QTCaptureConnectionFormatDescriptionWillChangeNotification` and `QTCaptureConnectionFormatDescriptionDidChangeNotification` notifications or by adding a key-value observer to the connection for the key `@"formatDescription"`.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Related Sample Code
QTRecorder

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Declared In
`QTCaptureConnection.h`

isEnabled

Returns a Boolean value indicating whether the receiver is enabled.

```
- (BOOL)isEnabled
```

Discussion
This method returns a Boolean indicating whether the receiver is enabled to send or receive media data. Individual connections can be enabled or disabled using the `setEnabled:` method.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

mediaType

Returns the QuickTime media type of the receiver.

```
- (NSString *)mediaType
```

Return Value
A QuickTime media type, as defined in `QTMedia.h`.

Discussion
This method returns the QuickTime media type, such as `QTMediaTypeVideo` and `QTMediaTypeSound`, of the receiver.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Related Sample Code
MyRecorder

Declared In
`QTCaptureConnection.h`

owner

Returns the `QTCaptureInput` or `QTCaptureOutput` object that owns the receiver.

```
- (id)owner
```

Return Value
A `QTCaptureInput` or `QTCaptureOutput` object that uses the receiver as a media connection.

Discussion
This method returns the input or output to which the receiver belongs. The returned input or output uses the receiver as a connection for sending or receiving a media stream.

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Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

setAttribute:forKey:

Sets a connection attribute for the given key.

```
- (void)setAttribute:(id)attribute
    forKey:(NSString *)key
```

Discussion
Use this method to set attributes of a capture connection. The keys that can be used with this method are described in the Constants section. This method raises an NSInvalidArgumentException if the attribute is read-only or not supported by the receiver. Applications using key-value coding can also set an attribute for a given key by passing that key to the `NSObject setValue:forKey:` method.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

setConnectionAttributes:

Sets the connection's attributes from the key-value pairs specified in the given dictionary.

```
- (void)setConnectionAttributes:(NSDictionary *)connectionAttributes
```

Discussion
This method allows application to set multiple attributes on a connection at once. This method raises an NSInvalidArgumentException if any of the attributes in the dictionary are read-only or not supported by the receiver. Applications using key-value coding can also set multiple attributes using the `NSObject setValuesForKeysWithDictionary:` method using attribute keys as keys in the dictionary.

Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

setEnabled:

Sets whether the receiver is enabled.

```
- (void)setEnabled:(BOOL)enabled
```

Discussion
This method sets whether the receiver is enabled to send or receive media data.

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Availability
Mac OS X v10.5 and later; QuickTime 7.2.1.

Declared In
`QTCaptureConnection.h`

Constants

Audio Attributes

Applications can use the following constants to display audio level meters for specific connections and to specify the volumes of audio channels. These string values can be used in key paths for key-value coding, key-value observing, and bindings.

```
NSString * const QTCaptureConnectionAudioAveragePowerLevelsAttribute;
NSString * const QTCaptureConnectionAudioPeakHoldLevelsAttribute;
NSString * const QTCaptureConnectionAudioMasterVolumeAttribute;
NSString * const QTCaptureConnectionAudioVolumesAttribute;
NSString * const QTCaptureConnectionEnabledAudioChannelsAttribute;
```

Constants

`QTCaptureConnectionAudioAveragePowerLevelsAttribute`

An `NSArray` of `NSNumbers` that correspond to the average power, in decibels, of each audio stream sent through the connection.

Applications that wish to display audio level meters for a specific connection can periodically check the value of this attribute. Average power levels change quickly and appear jumpy on a level meter. This string value can be used in key paths for key-value coding, key-value observing, and bindings.

Available in Mac OS X v10.5 and later.

Declared in `QTCaptureConnection.h`.

`QTCaptureConnectionAudioPeakHoldLevelsAttribute`

An `NSArray` of `NSNumbers` that correspond to the peak hold level, in decibels, of each audio channel sent through the connection.

Applications that wish to display audio level meters for a specific connection can periodically check the value of this attribute. Peak hold levels remain at the maximum volume for about a second, and are often useful for displaying audio clipping. This string value can be used in key paths for key-value coding, key-value observing, and bindings.

Available in Mac OS X v10.5 and later.

Declared in `QTCaptureConnection.h`.

`QTCaptureConnectionAudioMasterVolumeAttribute`

An `NSNumber` that specifies the master volume of all audio channels sent through the connection.

The values are between 0.0 and 1.0 for normal volume, or greater than 1.0 for boosting the audio gain. This attribute determines the master volumes of all audio channels sent through the connection. Applications that need to set the volumes of individual channels can set the `QTCaptureConnectionAudioVolumesAttribute` attribute. This string value can be used in key paths for key-value coding, key-value observing, and bindings.

Available in Mac OS X v10.5 and later.

Declared in `QTCaptureConnection.h`.

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`QTCaptureConnectionAudioVolumesAttribute`

An `NSArray` of `NSNumbers` that specify the volumes of audio channels sent through the connection.

The values are between 0.0 and 1.0 for normal volume, or greater than 1.0 for boosting the audio gain. This attribute determines the individual volumes of audio channels sent through the connection. Applications that need to set the master volume of all channels can set the `QTCaptureConnectionAudioMasterVolumeAttribute` attribute. This string value can be used in key paths for key-value coding, key-value observing, and bindings.

Available in Mac OS X v10.5 and later.

Declared in `QTCaptureConnection.h`.

`QTCaptureConnectionEnabledAudioChannelsAttribute`

An `NSIndexSet` that specifies which audio channels should be sent through the connection. The indices in the set should be between 0 and the number of volumes in `QTCaptureConnectionAudioVolumesAttribute`. This attribute allows applications to selectively disable certain audio channels from being sent through the connection. The value of this attribute should be an `NSIndexSet` that contains only the channels that should be used. By default, all audio channels are sent though a connection. This string value can be used in key paths for key-value coding, key-value observing, and bindings.

Available in Mac OS X v10.5 and later.

Declared in `QTCaptureConnection.h`.

Notifications

The following are notifications enabling you to change attributes, keys, and format descriptions.

QTCaptureConnectionAttributeDidChangeNotification

Posted when one of the connection's attributes has changed.

The notification's user info dictionary will contain the attribute key of the changed attribute for the key `QTCaptureConnectionChangedAttributeKey`.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QTCaptureConnection.h`

QTCaptureConnectionAttributeWillChangeNotification

Posted when one of the connection's attributes is about to change.

The notification's user info dictionary will contain the attribute key of the changed attribute for the key `QTCaptureConnectionChangedAttributeKey`.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QTCaptureConnection.h`

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QTCaptureConnectionChangedAttributeKey

Used as a key in the user info dictionary passed to `QTCaptureConnectionAttributeWillChangeNotification`, and `QTCaptureConnectionAttributeDidChangeNotification` to indicate the key of that attribute that changed.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QTCaptureConnection.h`

QTCaptureConnectionFormatDescriptionDidChangeNotification

Posted when the format description of a connection has changed.

Applications can be notified of changes to a connection's format by registering to receive this notification.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QTCaptureConnection.h`

QTCaptureConnectionFormatDescriptionWillChangeNotification

Posted when the format description of a connection is about to change.

Applications can be notified of changes to a connection's format by registering to receive this notification.

Availability
Available in Mac OS X v10.5 and later.

Declared In
`QTCaptureConnection.h`

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Document Revision History

This table describes the changes to *QTCaptureConnection Class Reference*.

Date	Notes
2009-05-06	Fixed constant listings. Minor fixes.
2009-03-04	Added availability information; fixed method and attribute descriptions; fixed typos.
2007-07-23	New document that describes the Objective-C API for supporting and working with QuickTime Capture.

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Document Revision History

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