
QTCaptureDecompressedVideoOutput Class Reference

Audio & Video



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QTCaptureDecompressedVideoOutput Class Reference

Inherits from	QTCaptureOutput : NSObject
Conforms to	NSObject (NSObject)
Framework	/System/Library/Frameworks/QTKit.framework
Availability	Available in QuickTime 7.2.1 and later.
Declared in	QTCaptureDecompressedVideoOutput.h
Related sample code	StillMotion

Overview

This class represents an output destination for a `QTCaptureSession` object that can be used to process decompressed frames from the video being captured. Instances of `QTCaptureDecompressedVideoOutput` produce decompressed video frames suitable for high-quality processing. Because instances maintain maximum frame quality and avoid dropping frames, using this output may result in reduced performance while capturing. Applications that need to process decompressed frames but can tolerate dropped frames or drops in decompression quality should use `QTCaptureVideoPreviewOutput` instead. Applications can access the decompressed frames via the `captureOutput:didOutputVideoFrame:withSampleBuffer:fromConnection:` (page 11) delegate method. Clients can also create subclasses of `QTCaptureDecompressedVideoOutput` to add custom capturing behavior.

Tasks

Decompressing Video Output

- [automaticallyDropsLateVideoFrames](#) (page 6)
Returns whether the receiver discards video frames that are output before earlier frames have been processed.
- [delegate](#) (page 7)
Returns the receiver's delegate.
- [setDelegate:](#) (page 9)
Sets the receiver's delegate.
- [setMinimumVideoFrameInterval:](#) (page 9)
Sets the minimum time interval between which the receiver should output consecutive video frames.

- [outputVideoFrame:withSampleBuffer:fromConnection:](#) (page 7)
Called whenever the receiver outputs a new video frame.
- [minimumVideoFrameInterval](#) (page 7)
Returns the minimum time interval between which the receiver will output consecutive video frames.
- [pixelBufferAttributes](#) (page 8)
Returns the Core Video pixel buffer attributes previously set by [setPixelBufferAttributes:](#) that determine what kind of pixel buffers are output by the receiver.
- [setAutomaticallyDropsLateVideoFrames:](#) (page 9)
Sets whether the receiver discards video frames that are output before earlier frames have been processed.
- [setPixelBufferAttributes:](#) (page 10)
Sets the CoreVideo pixel buffer attributes that determine what kind of pixel buffers are output by the receiver.
- [captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:](#) (page 11) *delegate method*
Called once for each frame that is dropped when [automaticallyDropsLateVideoFrames](#) is set to YES.
- [captureOutput:didOutputVideoFrame:withSampleBuffer:fromConnection:](#) (page 11) *delegate method*
Called whenever the video preview output outputs a new video frame.

Instance Methods

automaticallyDropsLateVideoFrames

Returns whether the receiver discards video frames that are output before earlier frames have been processed.

- (BOOL)automaticallyDropsLateVideoFrames

Return Value

This method returns YES if the receiver drops late video frames and returns NO otherwise.

Discussion

If this method returns YES, the receiver will discard frames that are queued up while the thread handling existing frames is blocked in the [outputVideoFrame:withSampleBuffer:fromConnection:](#) (page 7) or the [captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:](#) (page 11) delegate method. The delegate method [captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:](#) (page 11) will be called for each frame that is dropped. The default value is NO.

Availability

Mac OS X v10.5 and later; QuickTime 7.6.3.

Declared In

QTCaptureDecompressedVideoOutput.h

delegate

Returns the receiver's delegate.

```
- (id)delegate
```

Availability

Mac OS X v10.5 and later.

Declared In

QTCaptureDecompressedVideoOutput.h

minimumVideoFrameInterval

Returns the minimum time interval between which the receiver will output consecutive video frames.

```
- (NSTimeInterval)minimumVideoFrameInterval
```

Return Value

An `NSTimeInterval` specifying the minimum interval between video frames. Returns 0 if there is no frame rate limit set.

Discussion

This method returns the minimum amount of time that should separate consecutive frames output by the receiver. This is equivalent to the inverse of the maximum frame rate. A value of 0 indicates an unlimited maximum frame rate. The default value is 0.

Availability

Mac OS X v10.5 and later; QuickTime 7.6.3.

Declared In

QTCaptureDecompressedVideoOutput.h

outputVideoFrame:withSampleBuffer:fromConnection:

Called whenever the receiver outputs a new video frame.

```
- (void)outputVideoFrame:(CVImageBufferRef)videoFrame  
  withSampleBuffer:(QTSampleBuffer *)sampleBuffer  
  fromConnection:(QTCaptureConnection *)connection
```

Parameters

videoFrame

A Core Video buffer containing the decompressed frame.

sampleBuffer

A sample buffer containing additional information about the frame, such as its presentation time.

connection

The connection from which the video was received.

Discussion

This method should not be invoked directly. Subclasses can override this method to provide custom processing behavior for each frame. The default implementation calls the delegate's `captureOutput:didOutputVideoFrame:withSampleBuffer:fromConnection:` method. Subclasses should not assume that this method will be called on the main thread. In addition, this method is called periodically, so it must be efficient to prevent capture performance problems.

Special Considerations

In order to promptly reclaim memory resources, after this method returns, the sample data contained within the `QTSampleBuffer` object will be released using its `decrementSampleUseCount` method. Clients that reference the sample buffer and are interested in the sample data that it contains after this method returns should call `incrementSampleUseCount` on the sample buffer within this method to ensure that the data remains valid until they no longer need it (at which time they should call `decrementSampleUseCount`). Clients that reference the sample buffer after this method returns, but only need access to its metadata, such as duration, presentation time, and other attributes, need not call `incrementSampleUseCount`.

Note that to maintain optimal performance, some sample buffers directly reference pools of memory that may need to be reused by the device system and other capture inputs. This is frequently the case for uncompressed device native capture where memory blocks are copied as little as possible. If multiple sample buffers reference such pools of memory for too long, inputs will no longer be able to copy new samples into memory and those samples will be dropped. If your application is causing samples to be dropped by holding on to sample data for too long using `incrementSampleUseCount`, but it needs access to the sample data for a long period of time, consider copying the data into a new buffer and then calling `decrementSampleUseCount` on the sample buffer so that the memory it references can be reused.

Availability

Mac OS X v10.5 and later.

Declared In

`QTCaptureDecompressedVideoOutput.h`

pixelBufferAttributes

Returns the Core Video pixel buffer attributes previously set by `setPixelBufferAttributes:` that determine what kind of pixel buffers are output by the receiver.

- (NSDictionary *)pixelBufferAttributes

Return Value

A dictionary containing pixel buffer attributes for buffers output by the receiver. The keys in the dictionary are described in `CoreVideo/CVPixelBuffer.h`. If the return value is `NIL`, then the receiver outputs buffers using the fastest possible pixel buffer attributes.

Discussion

This method returns the pixel buffer attributes set by `setPixelBufferAttributes:` that clients can use to customize the size and pixel format of the video frames output by the receiver. When the dictionary is non-nil, the receiver will attempt to output pixel buffers using the attributes specified in the dictionary. A non-nil dictionary also guarantees that the output `CVImageBuffer` is a `CVPixelBuffer`. When the value for `kCVPixelBufferPixelFormatTypeKey` is set to an `NSNumber`, all image buffers output by the receiver will be in that format. When the value is an `NSArray`, image buffers output by the receiver will be in the most optimal format specified in that array. If the captured images are not in the one of the specified pixel formats, then a format conversion will be performed. If the dictionary is `NIL` or there is no value for the `kCVPixelBufferPixelFormatTypeKey`, then the receiver will output images in the most efficient possible

format given the input. For example, if the source is an iSight producing component Y'CbCr 8-bit 4:2:2 video then Y'CbCr 8-bit 4:2:2 will be used as the output format in order to avoid any conversions. The default value for the returned dictionary is NIL.

Availability

Available in Mac OS X v10.5 and later.

Declared In

QTCaptureDecompressedVideoOutput.h

setAutomaticallyDropsLateVideoFrames:

Sets whether the receiver discards video frames that are output before earlier frames have been processed.

```
- (void)setAutomaticallyDropsLateVideoFrames:(BOOL)automaticallyDropsLateVideoFrames
```

Parameters

automaticallyDropsLateVideoFrames

Whether the receiver should drop late video frames.

Discussion

Setting this to YES will cause the receiver to discard frames that are queued up while the thread handling existing frames is blocked in the `outputVideoFrame:withSampleBuffer:fromConnection:` or the `captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:` (page 11) delegate method. The delegate method `captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:` (page 11) will be called for each frame that is dropped. The default value is NO.

Availability

Mac OS X v10.5 and later; QuickTime 7.6.3.

Declared In

QTCaptureDecompressedVideoOutput.h

setDelegate:

Sets the receiver's delegate.

```
- (void)setDelegate:(id)delegate
```

Availability

Mac OS X v10.5 and later.

Declared In

QTCaptureDecompressedVideoOutput.h

setMinimumVideoFrameInterval:

Sets the minimum time interval between which the receiver should output consecutive video frames.

```
- (void)setMinimumVideoFrameInterval:(NSTimeInterval)minimumVideoFrameInterval
```

Parameters*minimumVideoFrameInterval*

An `NSTimeInterval` specifying the minimum interval between video frames. A value of 0 indicates that there should be no frame rate limit.

Discussion

This method sets the minimum amount of time that should separate consecutive frames output by the receiver. This is equivalent to the inverse of the maximum frame rate. A value of 0 indicates an unlimited maximum frame rate. The default value is 0.

Availability

Mac OS X v10.5 and later; QuickTime 7.6.3.

Declared In

`QTCaptureDecompressedVideoOutput.h`

setPixelFormatAttributes:

Sets the `CoreVideo` pixel buffer attributes that determine what kind of pixel buffers are output by the receiver.

```
- (void)setPixelFormatAttributes:(NSDictionary *)pixelBufferAttributes
```

Parameters*pixelBufferAttributes*

A dictionary containing pixel buffer attributes for buffers that will be output by the receiver. The keys in the dictionary are described in `CoreVideo/CVPixelBuffer.h`. If the dictionary is `NIL`, then the receiver outputs buffers using the fastest possible pixel buffer attributes.

Discussion

This method sets the pixel buffer attributes that clients can use to customize the size and pixel format of the video frames output by the receiver. When the dictionary is non-nil, the receiver will attempt to output pixel buffers using the attributes specified in the dictionary. A non-nil dictionary also guarantees that the output `CVImageBuffer` is a `CVPixelBuffer`. When the value for `kCVPixelBufferPixelFormatTypeKey` is set to an `NSNumber`, all image buffers output by the receiver will be in that format. When the value is an `NSArray`, image buffers output by the receiver will be in the most optimal format specified in that array. If the captured images are not in the one of the specified pixel formats, then a format conversion will be performed. If the dictionary is `NIL` or there is no value for the `kCVPixelBufferPixelFormatTypeKey`, then the receiver will output images in the most efficient possible format given the input. For example, if the source is an iSight producing component Y'CbCr 8-bit 4:2:2 video then Y'CbCr 8-bit 4:2:2 will be used as the output format in order to avoid any conversions.

Availability

Available in Mac OS X v10.5 and later.

Declared In

`QTCaptureDecompressedVideoOutput.h`

Delegate Methods

captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:

Called once for each frame that is dropped when `automaticallyDropsLateVideoFrames` is set to YES.

```
- (void)captureOutput:(QTCaptureOutput *)captureOutput
  didDropVideoFrameWithSampleBuffer:(QTSampleBuffer *)sampleBuffer
  fromConnection:(QTCaptureConnection *)connection
```

Parameters

captureOutput

The `QTCaptureDecompressedVideoOutput` instance that dropped the late video frame.

sampleBuffer

A `QTSampleBuffer` instance containing metadata about the dropped frame, such as its duration and presentation time stamp. This sample buffer will contain none of the original video data, and accessing its `bytesForAllSamples` method is invalid and will throw an exception.

connection

The connection from which the dropped video frame was received.

Discussion

When `automaticallyDropsLateVideoFrames` is set to YES, this method is called whenever a late video frame is dropped. This method is called once for each dropped frame and may be called before the call to the `outputVideoFrame:withSampleBuffer:fromConnection:` (page 7) or the `captureOutput:didDropVideoFrameWithSampleBuffer:fromConnection:` (page 11) delegate method during which those frames were dropped returns. The `QTSampleBuffer` object passed to this delegate method will contain metadata about the dropped video frame, such as its duration and presentation time stamp, but will contain no actual video data. Delegates should not assume that this method will be called on the main thread. Because this method may be called on the same thread that is responsible for outputting video frames, it must be efficient to prevent further capture performance problems, such as additional dropped video frames.

Availability

Mac OS X v10.5 and later; QuickTime 7.6.3.

Declared In

`QTCaptureDecompressedVideoOutput.h`

captureOutput:didOutputVideoFrame:withSampleBuffer:fromConnection:

Called whenever the video preview output outputs a new video frame.

```
- (void)captureOutput:(QTCaptureOutput *)captureOutput
  didOutputVideoFrame:(CVImageBufferRef)videoFrame
  withSampleBuffer:(QTSampleBuffer *)sampleBuffer
  fromConnection:(QTCaptureConnection *)connection
```

Parameters

captureOutput

The `QTCaptureDecompressedVideoOutput` instance that output the frame.

videoFrame

A Core Video image buffer containing the decompressed frame.

sampleBuffer

A sample buffer containing additional information about the frame, such as its presentation time.

connection

The connection from which the video was received.

Discussion

Delegates receive this message whenever the output decompresses and outputs a new video frame. Delegates can use the provided video frame for a custom preview or for further image processing. Delegates should not assume that this method will be called on the main thread. In addition, this method is called periodically, so it must be efficient to prevent capture performance problems.

Special Considerations

In order to promptly reclaim memory resources, after this method returns, the sample data contained within the `QTSampleBuffer` object will be released using its `decrementSampleUseCount` method. Clients that reference the sample buffer and are interested in the sample data that it contains after this method returns should call `incrementSampleUseCount` on the sample buffer within this method to ensure that the data remains valid until they no longer need it (at which time they should call `decrementSampleUseCount`). Clients that reference the sample buffer after this method returns, but only need access to its metadata, such as duration, presentation time, and other attributes, need not call `incrementSampleUseCount`.

Note that to maintain optimal performance, some sample buffers directly reference pools of memory that may need to be reused by the device system and other capture inputs. This is frequently the case for uncompressed device native capture where memory blocks are copied as little as possible. If multiple sample buffers reference such pools of memory for too long, inputs will no longer be able to copy new samples into memory and those samples will be dropped. If your application is causing samples to be dropped by holding on to sample data for too long using `incrementSampleUseCount`, but it needs access to the sample data for a long period of time, consider copying the data into a new buffer and then calling `decrementSampleUseCount` on the sample buffer so that the memory it references can be reused.

Availability

Mac OS X v10.5 and later.

Declared In

`QTCaptureDecompressedVideoOutput.h`

Document Revision History

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

Date	Notes
2010-01-26	Minor formatting fixes and verification of symbols.
2009-05-20	Updated new method descriptions for Mac OS X v10.6 and QuickTime 7.6.3.
2009-03-04	Added four new method descriptions; updated availability information.
2007-07-19	New document that describes the Objective-C API for supporting and working with QuickTime Capture.

REVISION HISTORY

Document Revision History