Protocol

MTLSharedEvent

An instance you use to synchronize access to Metal resources across multiple CPUs, GPUs, and processes.

iOS 12.0+ | iPadOS 12.0+ | Mac Catalyst 13.1+ | macOS 10.14+ | tvOS 12.0+ | visionOS 1.0+

```
protocol MTLSharedEvent : MTLEvent
```

Mentioned in

- About synchronization events
- Synchronizing events across multiple devices or processes
- Synchronizing resource accesses between multiple passes with a fence
- Understanding the Metal 4 core API

Overview

The `MTLSharedEvent` protocol inherits from and adds additional behaviors to `MTLEvent`. Use shared events only when you need to synchronize changes to resources across multiple Metal device instances, across processes, or between a device instance and CPU access to resources. Otherwise, use nonshared events.

Don't implement this protocol yourself; instead, to create an `MTLSharedEvent` instance, call the `makeSharedEvent()` method of an `MTLDevice` instance.

To pass this event to another process, first create a handle to the shared event by calling its `makeSharedEventHandle()` method. Then, transfer the handle to another process with XPC, and from that process, call the `makeSharedEvent(handle:)` of an `MTLDevice` instance.

For more information, see Synchronizing events across multiple devices or processes and Synchronizing events between a GPU and the CPU.

Topics

Synchronizing a shareable event

`var signaledValue: UInt64`

The current signal value for the shareable event.

Required

`func notify(MTLSharedEventListener, atValue: UInt64, block: MTLSharedEventNotificationBlock)`

Schedules a notification handler to be called after the shareable event's signal value equals or exceeds a given value.

Required

Creating a shared event handle

`func makeSharedEventHandle() -> MTLSharedEventHandle`

Creates a new shareable event handle.

Required

Instance Methods

`func valueSignaled(UInt64) async`

`func wait(untilSignaledValue: UInt64, timeoutMS: UInt64) -> Bool`

Required

Relationships

Inherits From

MTLEvent
NSObjectProtocol
Sendable

`SendableMetatype`

See Also

Signal events

{} Implementing a multistage image filter using heaps and events

Use events to synchronize access to resources allocated on a heap.

About synchronization events

Synchronize access to resources in your app by signaling events.

Synchronizing events within a single device

Use nonshareable events to synchronize your app's work within a single device.

Synchronizing events across multiple devices or processes

Use shareable events to synchronize your app's work across multiple devices or processes.

Synchronizing events between a GPU and the CPU

Use shareable events to synchronize your app's work between a GPU and the CPU.

`protocol MTLEvent`

A simple semaphore to synchronize access to Metal resources.

`class MTLSharedEventHandle`

An instance you use to recreate a shareable event.

`class MTLSharedEventListener`

A listener for shareable event notifications.

`typealias MTLSharedEventNotificationBlock`

A block of code invoked after a shareable event's signal value equals or exceeds a given value.