Framework

Audio Toolbox

Record or play audio, convert formats, parse audio streams, and configure your audio session.

iOS 2.0+ | iPadOS 2.0+ | Mac Catalyst 13.1+ | macOS 10.0+ | tvOS 9.0+ | visionOS 1.0+

Overview

The AudioToolbox framework provides interfaces for recording, playback, and stream parsing. In iOS, the framework provides additional interfaces for managing audio sessions.

Topics

Essentials

Porting your audio code to Apple silicon

Eliminate issues in your audio-specific code when running on Apple silicon Mac computers.

Audio Units

Generating spatial audio from a multichannel audio stream

Convert 8-channel audio to 2-channel spatial audio by using a spatial mixer audio unit.

Audio Unit v3 Plug-Ins

Deliver custom audio effects, instruments, and other audio behaviors using an Audio Unit v3 app extension.

Audio Components

Find, load, and configure audio components, such as Audio Units and audio codecs.

- Audio Unit v2 (C) API

  Configure an Audio Unit and prepare it to render audio.

- Audio Unit Properties

  Obtain information about the built-in mixers, equalizers, filters, effects, and other Audio Unit app extensions.

- Audio Unit Voice I/O

  Configure system voice processing and respond to speech events.

Playback and Recording

- Audio Queue Services

  Connect to audio hardware and manage the recording or playback process.

- Audio Services

  Play short sounds or trigger a vibration effect on iOS devices with the appropriate hardware.

- Music Player

  Create and play a sequence of tracks, and manage aspects of playback in response to standard events.

- Anchoring sound to a window or volume

  Provide unique app experiences by attaching sounds to windows and volumes in 3D space.

Audio Files and Formats

- Audio Format Services

  Access information about audio formats and codecs.

- Audio File Services

  Read or write a variety of audio data to or from disk or a memory buffer.

- Extended Audio File Services

  Read and write compressed files and linear PCM audio files using a simplified interface.

- Audio File Stream Services

  Parse streamed audio files as the data arrives on the user's computer.

- Audio File Components

  Get information about audio file formats, and about files containing audio data.

- Core Audio File Format

  Parse the structure of Core Audio files.

Utilities

- Analyzing audio performance with Instruments

  Ensure a smooth and immersive audio experience in your apps using Audio System Trace.

- Audio Converter Services

  Convert between linear PCM audio formats, and between linear PCM and compressed formats.

- Audio Session Support

  Describe the properties that you associate with audio sessions and audio routes.

- Audio Toolbox Debugging

  Obtain the internal state of Core Audio objects during the development and debugging of your code.

- Workgroup Management

  Coordinate the activity of custom real-time audio threads with those of the system and other processes.

- Audio Codec

  Translate audio data from one format to another.

- Clock Utilities

  Manage time-related information associated with audio playback.

Deprecated

- Deprecated Symbols

  Review unsupported symbols and their replacements.

Reference

- AudioToolbox Structures
- AudioToolbox Enumerations
- AudioToolbox Constants

AudioToolbox Functions

AudioToolbox Data Types

Macros

Macros

Protocols

`protocol` **SpatialAudioExperience**

Configure an audio stream for spatial computing.

Structures

`struct` **AutomaticSpatialAudio**

A spatial audio experience determined by the system.

`struct` **BypassedSpatialAudio**

An experience in which the system does not apply spatial processing to the audio stream.

`struct` **FixedSpatialAudio**

A spatial experience that does not take user motion into account.

`struct` **HeadTrackedSpatialAudio**

A spatial experience that takes user motion into account.

Variables

```
var kAUAudioMixParameter_RemixAmount: AudioUnitParameterID
var kAUAudioMixParameter_Style: AudioUnitParameterID
var kAUAudioMixProperty_EnableSpatialization: AudioUnitPropertyID
var kAUAudioMixProperty_SpatialAudioMixMetadata: AudioUnitPropertyID
var kAudioCodecContentSource_AV_Spatial_Live: Int32
var kAudioCodecContentSource_AV_Spatial_Offline: Int32
var kAudioCodecContentSource_AV_Traditional_Live: Int32
var kAudioCodecContentSource_AV_Traditional_Offline: Int32
```

```
var kAudioCodecContentSource_AppleAV_Spatial_Live: Int32

var kAudioCodecContentSource_AppleAV_Spatial_Offline: Int32

var kAudioCodecContentSource_AppleAV_Traditional_Live: Int32

var kAudioCodecContentSource_AppleAV_Traditional_Offline: Int32

var kAudioCodecContentSource_AppleCapture_Spatial: Int32

var kAudioCodecContentSource_AppleCapture_Spatial_Enhanced: Int32

var kAudioCodecContentSource_AppleCapture_Traditional: Int32

var kAudioCodecContentSource_AppleMusic_Spatial: Int32

var kAudioCodecContentSource_AppleMusic_Traditional: Int32

var kAudioCodecContentSource_ApplePassthrough: Int32

var kAudioCodecContentSource_Capture_Spatial: Int32

var kAudioCodecContentSource_Capture_Spatial_Enhanced: Int32

var kAudioCodecContentSource_Capture_Traditional: Int32

var kAudioCodecContentSource_Music_Spatial: Int32

var kAudioCodecContentSource_Music_Traditional: Int32

var kAudioCodecContentSource_Passthrough: Int32

var kAudioCodecContentSource_Reserved: Int32

var kAudioCodecContentSource_Unspecified: Int32

var kAudioCodecDynamicRangeControlConfiguration_Capture: UInt32

var kAudioCodecDynamicRangeControlConfiguration_Movie: UInt32

var kAudioCodecDynamicRangeControlConfiguration_Music: UInt32

var kAudioCodecDynamicRangeControlConfiguration_None: UInt32

var kAudioCodecDynamicRangeControlConfiguration_Speech: UInt32

var kAudioCodecPropertyASPFrequency: AudioCodecPropertyID

var kAudioCodecPropertyContentSource: AudioCodecPropertyID

var kAudioCodecPropertyDynamicRangeControlConfiguration: AudioCodec
PropertyID
```

```
var kAudioConverterPropertyChannelMixMap: AudioConverterPropertyID
```

```
var kAudioConverterPropertyPerformDownmix: AudioConverterPropertyID
```

```
var kAudioUnitErr_MultipleVoiceProcessors: OSStatus
```

```
var kAudioUnitSubType_AUAudioMix: UInt32
```

Functions

```
func AudioConverterFillComplexBufferRealtimeSafe(AudioConverterRef, AudioConverterComplexInputDataProcRealtimeSafe, UnsafeMutableRawPointer?, UnsafeMutablePointer<UInt32>, UnsafeMutablePointer<AudioBufferList>, UnsafeMutablePointer<AudioStreamPacketDescription>?) -> OSStatus
```

```
func AudioConverterFillComplexBufferWithPacketDependencies(AudioConverterRef, AudioConverterComplexInputDataProc, UnsafeMutableRawPointer?, UnsafeMutablePointer<UInt32>, UnsafeMutablePointer<AudioBufferList>, UnsafeMutablePointer<AudioStreamPacketDescription>?, UnsafeMutablePointer<AudioStreamPacketDependencyDescription>) -> OSStatus
```

```
func AudioFileWritePacketsWithDependencies(AudioFileID, Bool, UInt32, UnsafePointer<AudioStreamPacketDescription>?, UnsafePointer<AudioStreamPacketDependencyDescription>, Int64, UnsafeMutablePointer<UInt32>, UnsafeRawPointer) -> OSStatus
```

```
func AudioServicesPlayAlertSound(SystemSoundID, spatialExperience: any SpatialAudioExperience) async
```

Play an alert sound with the provided spatial audio experience.

```
func AudioServicesPlaySystemSound(SystemSoundID, spatialExperience: any SpatialAudioExperience) async
```

Play a system sound with the provided spatial audio experience.

Type Aliases

```
typealias AudioConverterComplexInputDataProcRealtimeSafe
```

Enumerations

```
enum AUAudioMixRenderingStyle
```

enum SpatialAudioExperiences