

# Sound Functions

## Accessing Sound Devices and Hardware

### Access sound devices

```
int          SNDAcquire(int soundResource, int priority, int preempt, int timeout,
                        SNDNegotiationFun negFun, void *arg, port_t *devicePort, port_t
                        *ownerPort)

int          SNDReset(int soundResource, port_t devicePort, port_t ownerPort)
int          SNDRelease(int soundResource, port_t *devicePort, port_t *ownerPort)
```

### Reserve sound devices for recording or playback

```
int          SNDReserve(int soundResource, int priority)
int          SNDUnreserve(int soundResource)
```

### Set the host computer for subsequent playback or recording

```
int          SNDSetHost(char *newHostname)
```

### Sound playback utilities

```
int          SNDSetVolume(int left, int right)
int          SNDGetVolume(int *left, int *right)
int          SNDSetMute(int speakerOn)
int          SNDGetMute(int *speakerOn)
int          SNDSetFilter(int filterOn)
int          SNDGetFilter(int *filterOn)
```

## Recording and Playing

### Play a soundfile

```
int SNDPlaySoundfile(char *path, int priority)
```

### Recording and playing a sound

```
int          SNDStartPlaying(SNDSoundStruct *sound, int tag, int priority, int preempt,
                             SNDNotificationFun beginFun, SNDNotificationFun endFun)
int          SNDVerifyPlayable(SNDSoundStruct *sound)
int          SNDStartRecording(SNDSoundStruct *sound, int tag, int priority, int preempt,
                             SNDNotificationFun beginFun, SNDNotificationFun endFun)
int          SNDStartRecordingFile(char *fileName, SNDSoundStruct *sound, int tag, int
                             priority, int preempt, SNDNotificationFun beginFun,
                             SNDNotificationFun endFun)
int          SNDStop(int tag)
```

int	<b>SNDWait</b> (int <i>tag</i> )
int	<b>SNDSamplesProcessed</b> (int <i>tag</i> )
int	<b>SNDModifyPriority</b> (int <i>tag</i> , int <i>newPriority</i> )

# Reading and Writing Soundfiles

## Read a sound from a file

int	<b>SNDReadSoundfile</b> (char * <i>path</i> , SNDSoundStruct ** <i>sound</i> )
int	<b>SNDRead</b> (int <i>fd</i> , SNDSoundStruct ** <i>sound</i> )
int	<b>SNDReadHeader</b> (int <i>fd</i> , SNDSoundStruct ** <i>sound</i> )
int	<b>SNDReadDSPfile</b> (char * <i>path</i> , SNDSoundStruct ** <i>sound</i> , char * <i>info</i> )

## Write a sound to a file

int	<b>SNDWriteSoundfile</b> (char * <i>path</i> , SNDSoundStruct * <i>sound</i> )
int	<b>SNDWrite</b> (int <i>fd</i> , SNDSoundStruct * <i>sound</i> )
int	<b>SNDWriteHeader</b> (int <i>fd</i> , SNDSoundStruct * <i>sound</i> )

# Accessing Sound Data

## Create and free a sound structure

int	<b>SNDAlloc</b> (SNDSoundStruct ** <i>sound</i> , int <i>dataSize</i> , int <i>dataFormat</i> , int <i>samplingRate</i> , int <i>channelCount</i> , int <i>infoSize</i> )
int	<b>SNDFree</b> (SNDSoundStruct * <i>sound</i> )

## Gain access to sampled sound data

int	<b>SNDGetDataPointer</b> (SNDSoundStruct * <i>sound</i> , char ** <i>ptr</i> , int * <i>size</i> , int * <i>width</i> )
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## Measure samples in a sound

int	<b>SNDSampleCount</b> (SNDSoundStruct * <i>sound</i> )
int	<b>SNDBytesToSamples</b> (int <i>byteCount</i> , int <i>channelCount</i> , int <i>dataFormat</i> )
int	<b>SNDSamplesToBytes</b> (int <i>sampleCount</i> , int <i>channelCount</i> , int <i>dataFormat</i> )

# Accessing the DSP

## Boot the DSP

int	<b>SNDBootDSP</b> (port_t * <i>devicePort</i> , port_t * <i>ownerPort</i> , SNDSoundStruct * <i>dspCore</i> )
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## Run the DSP

int	<b>SNDRunDSP</b> (SNDSoundStruct * <i>dspCore</i> , char * <i>toDSP</i> , int <i>toCount</i> , int <i>toWidth</i> , int <i>toBufferSize</i> , char ** <i>fromDSP</i> , int * <i>fromCount</i> , int <i>fromWidth</i> , int <i>negotiationTimeout</i> , int <i>flushTimeout</i> , int <i>conversionTimeout</i> )
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# Compressing Sound Data

## Compress or decompress a sound

int

**SNDCompressSound**(SNDSoundStruct *\*fromSound*, SNDSoundStruct *\*\*toSound*,  
BOOL *bitFaithful*, int *compressionAmount*)

## Query for frequency bands used by Audio Transform Compression

int

**SNDGetNumberOfATCBands**(int *\*numBands*)

int

**SNDGetATCBandFrequencies**(int *numBands*, float *\*centerFreqs*)

int

**SNDGetATCBandwidths**(int *numBands*, float *\*bandwidths*)

## Speed up or slow down playback of ATC sound

int

**SNDDropATCSamples**(int *numSamples*, int *bySamples*)

int

**SNDInsertATCSamples**(int *numSamples*, int *bySamples*)

## Modify volume or equalization for ATC playback

int

**SNDSetATCGain**(float *level*)

int

**SNDGetATCGain**(float *\*level*)

int

**SNDSetATCEqualizerGains**(int *numBands*, float *\*gains*)

int

**SNDGetATCEqualizerGains**(int *numBands*, float *\*gains*)

int

**SNDScaleATCEqualizerGains**(int *numBands*, float *\*gainScalars*)

## Set or get ATC parameters

int

**SNDSetATCSquelchThresholds**(int *numBands*, float *\*thresholds*)

int

**SNDGetATCSquelchThresholds**(int *numBands*, float *\*thresholds*)

int

**SNDUseDefaultATCSquelchThresholds**(void)

## Set and get compression attributes used in recording

int

**SNDSetCompressionOptions**(SNDSoundStruct *\*sound*, int *bitFaithful*, int  
*compressionAmount*)

int

**SNDGetCompressionOptions**(SNDSoundStruct *\*sound*, int *\*bitFaithful*, int  
*\*compressionAmount*)

# Converting Sound Data

## Convert between logarithmic and linear units

float

**SNDConvertDecibelsToLinear**(float *dB*)

float

**SNDConvertLinearToDecibels**(float *linear*)

## Convert a sound's attributes

int

**SNDConvertSound**(SNDSoundStruct *\*fromSound*, SNDSoundStruct *\*\*toSound*)

unsigned char

**SNDMulaw**(short *linearValue*)

short

**SNDiMulaw**(unsigned char *mulawValue*)

# Editing Sound Data

## Copy all or part of a sound

int	<b>SNDCopySound</b> (SNDSoundStruct ** <i>toSound</i> , SNDSoundStruct * <i>fromSound</i> )
int	<b>SNDCopySamples</b> (SNDSoundStruct ** <i>toSound</i> , SNDSoundStruct * <i>fromSound</i> , int <i>startSample</i> , int <i>sampleCount</i> )

## Edit a sampled sound

int	<b>SNDInsertSamples</b> (SNDSoundStruct * <i>toSound</i> , SNDSoundStruct * <i>fromSound</i> , int <i>startSample</i> )
int	<b>SNDDeleteSamples</b> (SNDSoundStruct * <i>sound</i> , int <i>startSample</i> , int <i>sampleCount</i> )
int	<b>SNDCompactSamples</b> (SNDSoundStruct ** <i>toSound</i> , SNDSoundStruct * <i>fromSound</i> )

# Sound Errors

## Describe a sound error

char	<b>*SNDSoundError</b> (int <i>err</i> )
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