

## SOUND in Flash

There are two types of sounds in Flash: event sounds and stream sounds. An event sound must download completely before it begins playing, and it continues playing until explicitly stopped. Stream sounds begin playing as soon as enough data for the first few frames has been downloaded; stream sounds are synchronized to the Timeline for playing on a Web site.

You select compression options to control the quality and size of sounds in exported movies. You can select compression options for individual sounds using the Sound Properties dialog box, or define settings for all sounds in the movie in the Publish Settings dialog box.

You can import the following sound file formats into Flash:

- WAV (Windows only)
- AIFF (Macintosh only)
- MP3 (Windows or Macintosh)

If you have QuickTime 4 or later installed on your system, you can import these additional sound file formats:

- AIFF (Windows or Macintosh)
- Sound Designer II (Macintosh only)
- Sound Only QuickTime Movies (Windows or Macintosh)
- Sun AU (Windows or Macintosh)
- System 7 Sounds (Macintosh only)
- WAV (Windows or Macintosh)

Flash stores sounds in the library along with bitmaps and symbols. As with graphic symbols, you need only one copy of a sound file to use that sound in any number of ways in your movie.

### To import a sound:

- 1 Choose File > Import to Library.
- 2 In the Import dialog box, locate and open the desired sound file.

To add a sound to a movie from the library, you assign the sound to a layer and set options in the Sound controls in the Property inspector. It is recommended that you place each sound on a separate layer.

### To add a sound to a movie:

- 1 Import the sound into the library if it has not already been imported.
- 2 Choose Insert > Layer to create a layer for the sound.
- 3 With the new sound layer selected, drag the sound from the Library panel onto the Stage. The sound is added to the current layer.

Each layer acts like a separate sound channel. The sounds on all layers are combined when you play back the movie.

- 4 In the Timeline, select the first frame that contains the sound file.
- 5 Choose Window > Properties and click the arrow in the lower right corner to expand the Property inspector.
- 6 In the Property inspector, choose the sound file from the Sound pop-up menu.
- 7 Choose an effect option from the Effects pop-up menu:

- ❑ None applies no effects to the sound file. Choose this option to remove previously applied effects.
- ❑ Left Channel/Right Channel plays sound in the left or right channel only.
- ❑ Fade Left to Right/Fade Right to Left shifts the sound from one channel to the other.
- ❑ Fade In gradually increases the amplitude of a sound over its duration.
- ❑ Fade Out gradually decreases the amplitude of a sound over its duration.
- ❑ Custom lets you create your own In and Out points of sound using the Edit Envelope.

**8** Choose a synchronization option from the Sync pop-up menu:

- ❑ Event synchronizes the sound to the occurrence of an event. An event sound plays when its starting keyframe is first displayed and plays in its entirety, independently of the Timeline, even if the movie stops. Event sounds are mixed when you play your published movie.

An example of an event sound is a sound that plays when a user clicks a button. If an event sound is playing and the sound is instantiated again (for example, by the user clicking the button again) the first instance of the sound continues to play and another instance begins to play simultaneously.

- ❑ Start is the same as Event, except that if the sound is already playing, no new instance of the sound is played.
- ❑ Stop silences the specified sound.
- ❑ Stream synchronizes the sound for playing on a Web site. Flash forces animation to keep pace with stream sounds. If Flash can't draw animation frames quickly enough, it skips frames. Unlike event sounds, stream sounds stop if the movie stops. Also, a stream sound can never play longer than the length of the frames it occupies. Stream sounds are mixed when you publish your movie.

An example of a stream sound is the voice of a character in an animation that plays in multiple frames.

**Note:** If you use an MP3 sound as a stream sound, you must recompress the sound for export. You can choose to export the sound as an MP3 file, with the same compression settings that it had on import.

**9** Enter a value for Loop to specify the number of times the sound should loop.

For continuous play, enter a number large enough to play the sound for an extended duration. For example, to loop a 15-second sound for 15 minutes, enter 60.

**Note:** Looping stream sounds is not recommended. If a stream sound is set to loop, frames are added to the movie and the file size is increased by the number of times the sound is looped.

### Adding sounds to buttons

You can associate sounds with the different states of a button symbol. Because the sounds are stored with the symbol, they work for all instances of the symbol.

#### To add sound to a button:

- 1 Select the button in the Library panel.
- 2 Choose Edit from the options menu in the upper right corner.
- 3 In the button's Timeline, add a layer for sound.
- 4 In the sound layer, create a regular or blank keyframe to correspond to the button state to which you want to add a sound.

For example, to add a sound that plays when the button is clicked, create a keyframe in the frame labeled Down.

- 5 Click the keyframe you have just created.
- 6 Choose Window > Properties.
- 7 In the Property inspector, choose a sound file from the Sound pop-up menu.
- 8 Choose Event from the Synchronization pop-up menu.

To associate a different sound with each of the button's keyframes, create a blank keyframe and add another sound file for each keyframe. You can also use the same sound file and apply a different sound effect for each button keyframe.

### Starting and stopping sounds at keyframes

The most common sound-related task in Flash is starting and stopping sounds at keyframes in synchronization with animation.

#### **To stop and start a sound at a keyframe:**

- 1 Add a sound to a movie.  
To synchronize this sound with an event in the scene, choose a beginning keyframe that corresponds to the keyframe of the event in the scene. You can choose any of the synchronization options.
- 2 Create a keyframe in the sound layer's Timeline at the frame where you want the sound to end.  
A representation of the sound file appears in the Timeline.
- 3 Choose Window > Properties and click the arrow in the lower right corner to expand the Property inspector.
- 4 In the Property inspector, choose the same sound from the Sound pop-up menu.
- 5 Choose Stop from the Synchronization pop-up menu.  
When you play the movie, the sound stops playing when it reaches the ending keyframe.
- 6 To play back the sound, simply move the playhead.

#### **To set export properties for an individual sound:**

- 1 Do one of the following:
  - Double-click the sound's icon in the Library panel.
  - Right-click (Windows) or Control-click (Macintosh) a sound file in the Library panel and choose Properties from the context menu.
  - Select a sound in the Library panel and choose Properties from the options menu in the upper right corner of the panel.
  - Select a sound in the Library panel and click the properties icon at the bottom of the Library panel.
- 2 If the sound file has been edited externally, click Update.
- 3 For Compression, choose Default, ADPCM, MP3, Raw, or Speech.

- 4 Set export settings.
- 5 Click Test to play the sound once. Click Stop if you want to stop testing the sound before it has finished playing.
- 6 Adjust export settings if necessary until the desired sound quality is achieved.
- 7 Click OK.

#### Sample Rates

48 kHz	Studio Quality	Sound or music recorded to a digital medium
44.1 kHz	CD Quality	HiFi sound and music
32 kHz	Near CD-Quality	Prosumer digital camcorders
22.05 kHz	FM Radio Quality	Short, hi quality music clips
11 kHz	Acceptable: music	Longer music clips, high quality voice, SFX
5 kHz	Acceptable: speech	Speech, simple button sounds

#### Bit Resolution

16-bit	CD Quality	
12-bit	Near CD-Quality	
8-bit	FM Radio Quality	Short, hi quality music clips
4-bit	Acceptable for music	Longer music clips, hi quality voice, sound effects

#### Channels

Stereo and Mono (with Stereo being twice as large so don't do it on the internet)

#### File size

Sound can make files LARGE so watch out. Here is a simple formula to help determine size:

Seconds of audio x sample rate \* x # of channels x (bit depth / 8\*\*) = file size

- expressed in Hertz, not Kilohertz.
- There are 8 bits per second.

Thus, a 20 second stereo audio loop at 8 bits, 11 kHz would be calculated like this:

20 sec. X 11,025 Hz x 2 channels x (8 bits / 8 bits) = 441,000 bytes = 430 KB

When using sound in Flash you should start with the highest quality and then compress once in Flash. Highest would be 44.1 kHz, 16 bit. You will need to edit sounds or bring in CD sounds in SoundEdit 16 or the PC equivalent.

#### Formats

.WAV for PC's (Mac's won't recognize this, but will recognize FLA files that contain WAV clips created on a PC).

.AIFF or .AIF for Macs, but PC's don't recognize these files.

QuickTime- These files cannot be imported directly (.QTA or .MOV) but in QT you can export your sounds as WAVs or AIFF's which can be imported into Flash.

#### Exports from Flash

ADPCM- Primarily used in older versions of Flash.

MP3- Emerging standard for digital audio on the Internet. Works great on newer computers but older computers have problems b/c it is more process oriented and can slow things down when there are multiple tasks (tweening, sound). Still, it is now the most common.

RAW- Uncompressed sound. Not realistic for Internet pieces.