

Scream Audio Glossary

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About This Document

This document provides a reference to terms and file extensions used in the Scream Tool and Scream library documentation.

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1 Glossary

2D Sound

In Scream, a 2D Sound is a Sound that does not have an assigned distance model.

See also: [3D Sound](#), [Sound](#), [distance model](#).

3D Sound

In Scream, a 3D Sound is a Sound that has an assigned distance model, permitting distance attenuation based on game-world distances.

See also: [2D Sound](#), [Sound](#), [distance model](#).

ADPCM

An acronym that stands for Adaptive Differential Pulse Code Modulation. A type of pulse-code modulation that produces a lower bit rate than standard PCM by recording only scaled sample differences.

See also: [PCM](#).

ADSR envelope

Acronym for Attack, Decay, Sustain, Release, referring to the stages of a volume envelope. Attack is the initial rise to the peak amplitude. Decay is the initial lowering of the amplitude after its peak. Sustain is the sustaining level after the Decay. Release is the final decline of the signal to zero amplitude following a key-off or stop command.

all pass filter

An all-pass filter allows content of all frequencies through, but alters the phase relationships of frequencies within a range specified by a center frequency and bandwidth. This can be used to compensate for undesirable phase changes that have occurred in the signal.

attack

The first stage of an ADSR volume envelope, the time it takes for a signal to reach a certain threshold.

See also: [ADSR envelope](#).

attenuate

To diminish signal intensity (amplitude). Opposite of boost.

See also: [ducking](#), [boost](#).

audio signal

Time varying function that represents sound.

See also: [dynamic range](#).

auditioning server

Connected to Scream Tool, auditioning servers simulate the audio capabilities of the Scream library running on supported PlayStation® platforms. This allows designers to hear game audio content exactly as it will sound on a user's system, but without the overhead of running a build of a game.

auxiliary buss

Auxiliary busses enable parallel and collective treatment of Sound audio signal. You can insert an effect into an auxiliary buss, and route signal to it from one or more Sounds through auxiliary sends. Post-effect, wet signal routes back to the master buss or to a pre-master submix buss and is mixed with dry signal routed directly from Sounds to the master buss or to a pre-master submix buss.

See also: [auxiliary send](#), [buss](#), [effect](#), [master buss](#), [pre-master submix buss](#), [chorus](#), [delay](#), [I3DL2 reverb](#).

auxiliary buss effect

A DSP effect instantiated on an auxiliary buss. Auxiliary effects are usually applied collectively rather than individually to Sounds. Their input signal is a branch of one or more Sounds routing through an auxiliary buss, their wet signal (post-effect) feeding in parallel back into the master buss.

See also: [auxiliary send](#), [buss](#), [chorus](#), [delay](#), [I3DL2 reverb](#).

auxiliary send

An auxiliary send routes Sound signal to an auxiliary buss, upon which an effect may be inserted. When configuring auxiliary sends, you typically specify a gain amount that scales the level of the signal being sent, as well as an auxiliary buss to route to.

See also: [auxiliary buss effect](#), [buss](#), [post-send / pre-send](#).

azimuth

Specifies a Sound's location, in degrees clockwise, relative to the listener. 0 degrees is straight ahead, 90 degrees is directly on the right, 180 degrees is directly behind, and so on. Azimuth, in conjunction with focus, determine the placement of a Sound in two-dimensional space. Also known as panning azimuth.

See also: [focus](#), [panning azimuth](#).

band-pass filter

A band-pass filter attenuates frequency content both above and below a range specified by a center frequency and bandwidth, allowing frequency content within the range to pass. Opposite of notch filter.

See also: [filter](#), [notch filter](#).

Bank

A Bank is a container of one or more Sounds. When authoring audio content in Scream Tool, you save your work as design-time, XML-format Bank files (with a BANK file extension). To deploy audio content to the Scream library, you must export binary Bank files from Scream Tool (with a BNK extension).

See also: [Grain](#), [Sound](#), [.bank](#), [.bnk](#).

BankMerge/Build utility

A command-line tool for merging Bank, distance model, and effect presets files. BankMerge/Build can also be used for converting design-time Bank (BANK), distance model (DISTMODEL), and effect preset (BUSSCONFIG) files into binary runtime files as part of a build process.

See also: [Bank](#), [.bank](#), [.distmodel](#), [.bussconfig](#).

beat

The basic unit of pulse in music.

See also: [measure](#), [tempo](#), [time signature](#).

biquad filter

Type of linear filter that applies a transfer function consisting of the ratio of two quadratic functions. These filters can be used to implement a low-pass filter, a high-pass filter, or band-pass filter, among others.

See also: [filter](#), [low-pass filter](#), [high-pass filter](#), [band-pass filter](#), [transfer function](#).

Bitstream

In a multi-Layer Stream file, a Bitstream is a strand of audio data that can be played on a single synthesizer voice. When multi-Bitstream files are compiled, the respective data from each Bitstream is interleaved into file contents. This enables simultaneous access to data from all Bitstreams using a single read operation.

See also: [Layer](#), [multi-Layer Stream File](#), [Stream template](#), [Stream definition](#), [.scd](#), [.xvag](#).

boost

Increase signal intensity (amplitude). Opposite of attenuate.

See also: [attenuate](#).

buss

Pathway for the flow of audio data through the rendering synthesizer. In Scream, the rendering synthesizers (NGS and NGS2) have three types of busses: auxiliary, pre-master, and master.

See also: [auxiliary buss](#), [auxiliary buss effect](#), [auxiliary send](#), [pre-master submix buss](#), [master buss](#), [.bus](#), [.bussconfig](#).

CCSound

A CCSound (short for Continuous Controller Sound) provides continuous, dynamic control over the properties (including synthesizer properties) of one or more scripted Sounds, based on mapping of input parameter values using curves. A CCSound can also start, stop, and crossfade between scripted Sounds.

See also: [Sound](#).

channel

A separate stream of audio data designated for output to a particular speaker target. For example, a stereo audio file contains two channels of data, nominally the Left and Right channels, intended for output to speakers positioned to the left and right of a listener.

See also: [surround sound](#).

chorus

In a chorus effect, delayed and undelayed branches of input signal are mixed together while the delay time is modulated at low frequency. The delay time and modulation depth produce a detuning and consequent thickening of input signal.

See also: [effect](#), [delay](#).

clamp

Clamping is an arithmetical operation that constrains a value within a certain range. Values above the range are constrained to the range's maximum value; values below the range are constrained to the range's minimum value; while values within the range are unchanged. Scream Tool provides a *Clamp Register Grain* that enables clamping of local and global register values to a sub-range of their full range.

See also: [local register](#), [global register](#).

codec

An encoding and decoding algorithm used to compress audio data to reduce media storage requirements beyond uncompressed formats such as PCM. Examples, supported by Scream, include: WAV, VAG, VAG-HE, and ATRAC9™.

See also: [PCM](#), [.at9](#), [.vag](#), [.wav](#).

compressor

A compressor is a DSP effect that constrains the dynamic range of an audio signal. Compressors attenuate the level of an input signal if it reaches above a certain threshold. The amount of attenuation is determined by a ratio setting and the strength of the input level. Listed below are the various properties by which compressors are typically controlled.

See also: [effect](#), [dynamic range](#).

attack phase

Phase during which a compressor attenuates input signal to a level determined by the compressor ratio.

attack time

Time taken to attenuate signal level during the attack phase. Attack times are generally short (measured in milliseconds) such as to enable a compressor to respond appropriately to transient bursts.

channel linking

Channel data contained in an input signal can be linked so that all are attenuated equally by the compressor, thus retaining the original panning image.

knee

The attenuation curve centered around the threshold level, over which the compression response operates. The knee curve can be "soft" or "hard", that is, a rounded or sharp angle.

look-ahead time

A delay time that enables a compressor to analyze the dynamic content of its input signal. If a compressor uses a longer attack time, it can produce smoother gain transitions, however, it is less likely to catch transients. The look-ahead mechanism splits the input signal into two branches, and one branch is delayed. The non-delayed branch is used for analysis and serves to determine the compression amount for the delayed signal, which is used for output.

makeup gain

Gain added to compensate for the attenuation of signal that exceeds the compression threshold.

peak mode

A peak sensing compressor compares the compression threshold to the unprocessed signal during its processing.

See also: [RMS mode](#).

pumping

An artifact of compression. If the release time is too short, the gain may quickly fluctuate up and down as the input level moves above and below the threshold. This fluctuation is heard as a pumping effect.

ratio

The amount of gain reduction performed by a compressor. For example, with a ratio of 5:1, input signal with a level of 5 dB over the threshold is reduced to 1 dB over the threshold.

release phase

Following a fall of input signal level to below the compression threshold, the compressor returns its output signal to the non-attenuated state of its input signal.

release time

Time taken to increase signal level during the release phase. Release times are generally long (measured in seconds) such as to enable a compressor to transition smoothly back to non-attenuation.

RMS mode

An RMS compressor compares the compression threshold to an RMS averaging function of the signal during its compression processing.

See also: [peak mode](#).

side-chaining

If side-chaining is active, a compressor uses another signal to determine how strongly the compressed signal is reduced. On the NGS synthesizer, compressors on premaster submix busses can accept side-chain input from another premaster submix.

See also: [ducking](#).

threshold

If an audio signal's amplitude exceeds this threshold, a compressor reduces the audio signal's level. Usually measured in dB.

conditioning

The preparation of a raw asset (that is, an uncompressed high resolution audio file), for inclusion in a game's data package. In addition to the choice of codec, techniques for data size reduction include reducing the sample rate or bit depth (resolution) of the original audio file.

See also: [codec](#).

crossfade

Fading in the level of one audio signal while, at the same time, fading out the level of another audio signal.

See also: [ducking](#), [fade in](#), [fade out](#).

decay (time)

A time factor for the amplitude of an audio signal to decrease to inaudibility. Often used to refer to the diffuse tail portion in reverberation.

See also: [dry signal](#), [wet signal](#), [diffuse tail](#), [reverb \(reverberation\)](#).

decay (stage)

The second stage of an ADSR volume envelope.

See also: [ADSR envelope](#).

decibel (dB)

In acoustics, a decibel is a unit of loudness; named in honor of the famed inventor Alexander Graham Bell. In digital audio, a decibel is the base 10 logarithm of the ratio of the amplitude of a signal referenced against the maximum possible amplitude with respect to its representation as a digital signal.

delay

In a delay effect, input signal enters a delay line where it is held for a certain time before remerging and being heard. Delay times can range from milliseconds to seconds. An amount of signal emerging from the end of a delay line can be fed back into beginning. This is known as feedback. The amount of gain applied to feedback signal is an important control associated with delay effects.

See also: [effect](#), [chorus](#).

diffuse mixing

Method of mixing highly correlated multichannel content to avoid self-interference issues (unpredictable cancelations and reinforcements) with the signal.

See also: [downmixing](#), [mixing](#).

diffuse tail

Late reverberation.

See also: [decay \(time\)](#), [dry signal](#), [wet signal](#), [reverb \(reverberation\)](#).

DSP (digital signal processing)

Manipulation of a digital signal to modify or improve it. Examples include filters, distortion, compression, and other effects.

See also: [distortion effect](#), [compressor](#).

distance model

Distance models simulate the auditory effects of distance between a sound source and listener. A distance model defines a set of attenuation curves assigned to five audio parameters, significant in the simulation of distance. Distance is measured in abstracted units based on Inner and Outer Radius properties set on a Sound or Grain. Distance models are saved to a design-time `DISTMODEL` file format, and exported to a runtime binary `DML` file format for deployment in a game.

See also: [2D Sound](#), [3D Sound](#), [.distmodel](#), [.dml](#).

distortion effect

Distortion is the result of controlled audio signal clipping. Clipping occurs when the amplitude level of an audio waveform exceeds the maximum dynamic range, and is consequently clamped to the maximum value. This is known as “hard clipping”. The clamping *distorts* the crest or valley of the waveform to a shape more like a square wave, causing the distortion effect. With “soft clipping” (the algorithm employed by pre-send distortion effects on the NGS and NGS2 synths), the slope of the amplitude of the audio signal gently rolls-off once above the clipping threshold.

See also: [DSP \(digital signal processing\)](#).

Doppler shift

Doppler shift is the phenomenon of pitch shifting that occurs with a moving sound source (or a moving listener). It is named in honor of the nineteenth-century Austrian physicist, Christian Doppler. A common example is an ambulance or fire truck siren that moves towards and then away from a stationary listener. The pitch of the sound appears to increase as the siren becomes closer, and conversely, to decrease as the siren moves farther away. The effect of moving sound sources is sometimes exaggerated in games for dramatic effect.

See also: [pitchbend](#).

downmixing

The process of reducing the number of separate audio channels in a multi-channel audio signal such that it can be played back over a sound system that has fewer output channels (that is, speakers). An example of this would be a game featuring 5.1 (six-channel) surround sound audio that is played on PlayStation®Vita, which offers only stereo (two-channel) playback.

See also: [diffuse mixing](#), [mixing](#).

dry signal

Unprocessed audio signal with no DSP effects applied. Opposite of wet signal.

See also: [decay \(time\)](#), [wet signal](#), [diffuse tail](#), [reverb \(reverberation\)](#).

ducking

Technique of reducing the volume level of a sound (or group of sounds) in order to hear another sound (or group of sounds) more easily. For example, in a sports game, background music or crowd noise may be reduced in level during an announcement or commentary.

See also: [attenuate](#), [fade in](#), [fade out](#), [crossfade](#).

dynamic range

Ratio between the maximum and minimum amplitude of an audio signal, measured in dB.

See also: [compressor](#).

effect

An effect is a DSP algorithm that modifies the character or of an audio signal. Effects can be placed on auxiliary, premaster submix, and master busses.

See also: [buss](#), [DSP \(digital signal processing\)](#), [auxiliary buss effect](#), [pre-master submix buss](#), [master buss](#), [chorus](#), [delay](#).

fade in, fade out

An gradual increase or decrease, respectively, of the amplitude of an audio signal.

See also: [crossfade](#), [ducking](#).

feedback delay network (reverb)

Feedback delay network is a general term used for synthetic reverb. Feedback delay network is itself a DSP algorithm that simulates a diffuse reverb tail. Working in conjunction with a feedback delay network, a multi-tap delay line simulates reverb early reflections. And the natural attenuation of higher frequencies is simulated by low-pass filters.

See also: [reverb \(reverberation\)](#), [I3DL2 reverb](#).

file token

An opaque pointer representing an audio file. Tokens offer an efficient method for referencing Stream files.

See also: [file token storage](#), [pre-parsing](#).

file token storage

Storage in which file tokens can be stored at build time for retrieval during run time. The storage may be stored to disk and read into memory at run time.

See also: [file token](#).

filter

A filter boosts, passes, or attenuates frequency sub-ranges within the overall spectrum of an audio signal. Inline filters affect the whole signal, and their outputs feed forward in series, one into the next.

See also: [low-pass filter](#), [high-pass filter](#), [band-pass filter](#).

filter gain

Amount of signal boost (amplification) performed by a filter.

filter resonance

Filter resonance is an intensification of spectral content around a specified frequency.

fines

In Scream, a fine is a 128th microtonal subdivision of a semitone. There are 1,536 (12×128) fines per octave. In the Scream API, pitch transpose and pitchbend units are expressed in units of fines.

focus

The spread or width of a sound source, measured in degrees, as projected into a multi-speaker listening environment. Focus, in conjunction with azimuth, determine the placement of a Sound in two-dimensional space. For instance, 0 degrees would designate a point source; 90 degrees indicates the sound appears to emanate from an arc 90 degrees around the source. Also known as panning focus.

See also: [azimuth](#).

foley

Addition to a production of sounds associated with everyday objects to enhance the sense of reality. Examples include footsteps, creaking doors, and traffic noise.

frequency bandwidth

A range of spectral content falling within upper and lower frequency bounds, measured in units of Hertz.

gain

Amount by which a signal is amplified. It is measured either in decibels (dB), which correspond more closely with human perception of loudness, or in linear units between 0.0 and 1.0.

See also: [decibel \(dB\)](#).

global register

A holder of a dynamically changing value, functionally similar to a variable, that can be set and queried at run time by API calls or by Sound scripts. Global registers enable communication between a game engine and Sound scripts, and are used to build interactivity and intelligence into Sound playback. There are 64 global registers. Registers are 8-bit values within the range -128 to 127.

See also: [local register](#).

Grain

Grains are the building blocks of Sound scripts. Grains support a wide range of scripting techniques, such as conditional asset selection, conditional execution, looping, pitchbend manipulation, random asset selection, child sound sprouting, on-stop execution, and synchronization options.

See also: [Bank](#), [Sound](#).

Group

A set of Sounds targeted for collective manipulation, such as volume changes and ducking, pause, continue, stop, and other operations. Designers assign Sounds to Groups in Scream Tool. Group assignments are included in Bank contents.

See also: [ducking](#).

headroom

Amount by which the signal handling capabilities of an audio system can exceed a designated maximum level of signal amplitude. Measured in dB.

See also: [decibel \(dB\)](#).

high-shelf filter

Filter that attenuates or boosts spectral content linearly above a specified cut-off frequency.

See also: [low-shelf filter](#).

human hearing range

The frequency range of human hearing is nominally between 20 to 20,000 Hz. However, many individuals can hear only a subset of that range. Loss of the high end of the range is common as people age.

high-pass filter

A filter that allows signal above a specified cut-off frequency to pass through unaltered, while progressively attenuating signal below the cut-off.

See also: [filter](#), [low-pass filter](#).

Hertz, Hz

Hertz (abbreviated to Hz) is the unit commonly used to express a number of cycles (or oscillations) per second.

See also: [pitch](#).

instance limiting

Constrains the number of instances of a Sound that can play at the same time. Instance limiting has two parameters: an instance limit count and a mode. Instance limit count specifies the maximum number of concurrent instances of a Sound. Mode specifies what should happen when the number of instances reaches the specified limit. In addition to specifying Sound-specific instance limits, you can also constrain the concurrent number of Sound instances on a Group basis.

I3DL2 reverb

I3DL2 is an acronym that stands for “Interactive 3-D Audio Level 2”, an initiative of the Interactive Audio Special Interest Group (see [website](#)). I3DL2 is a feedback delay network (reverb) effect, available on auxiliary busses on the NGS and NGS2 synthesizers.

See also: [auxiliary buss effect](#), [auxiliary send](#), [buss](#), [reverb \(reverberation\)](#).

key-on / key-off

Key-on is the action of starting playback of a Sound. Key-off is the action of stopping playback of a Sound.

LFE (low frequency effect)

An audio channel used in surround sound applications that carries low-frequency content intended for playback through a subwoofer speaker. A typical usage is for explosions, thunder, or other such rumbling sounds.

LFO (Low Frequency Oscillator)

A low-frequency waveform (usually below 10 Hz), used for modulating audio parameters. In Scream, there are four LFOs available per Sound instance, which can target control parameters such as volume, pan, pitch, pitchbend, and so on.

duty cycle

The percentage of time the amplitude of a signal is above zero during one period. In Scream, duty cycle refers to the proportion of a square wave's positive state during one period.

Layer

In a multi-Layer Stream file, a Layer is a grouping of one or more Bitstreams that can be individually addressed and its volume and pan settings manipulated, both from Sound scripts and from Sndstream library functions.

See also: [Bitstream](#), [multi-Layer Stream File](#), [Stream template](#), [Stream definition](#), [.scd](#), [.xvag](#).

local register

A holder of a dynamically changing value, functionally similar to a variable, used to control the internal logic of a Sound script. Local registers are often used as a counter or for temporary data storage. A local register's scope is unique to each instance of a Sound in which it is used. Registers are 8-bit values within the range -128 to 127.

See also: [global register](#).

low-pass filter

A filter that allows signal below a specified cut-off frequency to pass through unaltered, while progressively attenuating signal above the cut-off.

See also: [high-pass filter](#).

low-shelf filter

Filter that attenuates or boosts spectral content linearly below a specified cut-off frequency.

See also: [high-shelf filter](#).

master buss

The master buss mixes and processes signal, routed from Sounds, from a pre-master submix buss, or from an auxiliary buss, ready for output to main speakers.

See also: [auxiliary buss](#), [pre-master submix buss](#).

measure

In music, a measure is a segment of time between two bar lines, the duration of which is defined by the number and type of beats (per the time signature) and the tempo.

See also: [beat](#), [time signature](#), [tempo](#).

MIDI (Musical Instrument Digital Interface)

Electronic music instrument industry standard and protocol for communication and connecting digital musical instruments. In Scream Tool, MIDI is used to coordinate Stream transitions.

See also: [Stream transition](#), [.mid](#).

mixing

Audio mixing is the process of combining multiple signals together, such as to balance their relative levels. Mixing can also include shaping the frequency content, adjusting spatial placement, and applying effects such as reverb to respective signals. In Scream Tool, the Group Mixer facilitates mixing of game audio content, allowing designers to create mix snapshots that can be recalled at run time.

See also: [downmixing](#), [diffuse mixing](#), [mix snapshot](#).

mix snapshot

Captures Group and Master volume settings, Group output destinations, and Group instance limits. Snapshots can be saved and exported to a group mixer file that can be loaded into the Scream Runtime, enabling recall of snapshots at run time.

See also: [downmixing](#), [mixing](#), [.gmx](#), [.groupmix](#).

multi-channel

Refers to an audio asset with multiple channels of audio content, each channel intended for a specific output speaker target, such as stereo (two channel) or 5.1 (six-channel) surround sound.

See also: [channel](#), [surround sound](#).

multi-Layer Stream File

The Sndstream library supports Stream files containing multiple Layers and interleaved Bitstreams. Interleaved Bitstreams offer considerable efficiency advantages when streaming data from optical media. They enable sample-accurate synchronization of multiple Bitstreams, allowing you to manipulate multi-Layer Streams as if live-mixing a multi-track recording. Multi-Layer Stream files use the XVAG file format.

See also: [Layer](#), [Bitstream](#), [Stream template](#), [Stream definition](#), [.scd](#), [.xvag](#).

mute

To temporarily silence a particular Sound or Group while continuing to play non-muted Sounds/Groups.

See also: [solo](#).

NGS

The name of the audio rendering synthesizer available on the PlayStation®Vita platform. NGS supports 2-channel output formats only, but otherwise provides very similar resources to NGS2.

See also: [synthesizer](#), [synth](#), [NGS2](#).

NGS2

The name of the audio rendering synthesizer available on the PlayStation®4 platform. NGS2 supports 6-channel and 8-channel surround sound output formats, but otherwise provides very similar resources to NGS.

See also: [synthesizer](#), [synth](#), [NGS](#), [surround sound](#).

normalization

Normalization linearly scales the level of a Waveform's source data such that its peak is a percentage of full-scale (maximum amplitude). For example, if set to 70%, the Waveform's level is scaled such that its peak amplitude is 70% of full scale.

See also: [dynamic range](#).

notch filter

Filter that passes all frequencies except those centered around a specified frequency band, the "notch". Opposite of band-pass filter.

See also: [filter](#), [band-pass filter](#).

octave

Interval between a pitch and a pitch that is half or double its frequency. For example, if an "A" note has a frequency of 440 Hz, then the "A" note an octave higher has a frequency of 880 Hz.

See also: [semitone](#), [tone](#).

output target

Target of an audio channel, such as the front left speaker.

pan, panning

The spatial placement of sound into a two-dimensional listening field.

panning azimuth

Also known as azimuth.

See also: [azimuth](#).

panning focus

Also known as focus.

See also: [focus](#).

path group

A path group is a variable directory mechanism used by Scream for streaming directories. Stream assets are assigned to a numbered path group, which can be locally defined in design time and run time environments.

See also: [Stream](#).

PCM

An acronym that stands for Pulse Code Modulation. A sampling process for converting analog audio signal to an uncompressed digital representation.

See also: [ADPCM](#).

peaking EQ filter

Filter that allows cut (attenuation) or boost (intensification) of a range of frequencies, specified by a center and bandwidth of the frequency range and amount of cut/boost.

See also: [filter](#).

pitch

Auditory sensation of a sound related to its frequency, usually in reference to musical notes. Although frequency is a major component of pitch, pitch is a subjective measure, influenced by human sound perception.

See also: [Hertz, Hz](#).

pitchbend

A smooth uninterrupted transition from one pitch to another, otherwise known in musical terminology as a *glissando*. In digital audio, pitchbend is controlled by two properties: range and factor. Range describes the maximum interval a sound can bend up or down from its original pitch. Factor acts as a scalar on the pitchbend range.

See also: [Doppler shift](#), [pitch transposition](#).

pitch transposition

Process of raising or lowering the playback pitch of an asset.

See also: [pitchbend](#).

play overlap

In the Scream Tool Script Editor or Sound Editor, clicking the play overlap button plays a Sound once through, then stops. Each time you click this button, a new instance of the Sound starts, whether or not previously started instances have completed.

post-send / pre-send

Incoming audio signal from a source Waveform or Stream voice divides into two branches: direct path and auxiliary send. The direct path branch routes to a Sound's output destination (be it a pre-master submix buss or the master buss). The auxiliary send branch subdivides into three independently controllable auxiliary sends, each routing to a different auxiliary buss. Inline DSP effects appear before and after this branching point. Effects placed before the branching point are "pre-send", whereas those

placed after the branching point are “post-send”. This is similar to that of a conventional audio mixing board.

See also: [auxiliary send](#), [Stream](#), [Waveform](#), [DSP \(digital signal processing\)](#), [effect](#).

pre-master submix buss

Routing audio signal to a pre-master submix buss enables pre-mixing and treatment of one or more audio signals from a Sound, auxiliary buss, or another pre-master submix buss prior to entering the master buss. The submix can be processed as a group, for example, a dialog, foley, music, or ambience submix.

See also: [auxiliary buss](#), [master buss](#), [foley](#).

pre-parsing

Reading a Stream file's header and creating a file token. This can be done at build time or load time.

See also: [file token](#).

processor affinity

Preferential use of or suitability to a particular processor.

quantization noise gradient

An approximation of the relative harmonic/inharmonic spectral content of a source file. Used when encoding to a spectrum-based compression format, such as ATRAC9™.

See also: [superframe](#), [.at9](#).

register

A holder of a dynamically changing value, functionally similar to a variable.

See also: [local register](#), [global register](#).

release

The fourth stage of an ADSR volume envelope.

See also: [ADSR envelope](#).

reverb (reverberation)

Reverb is the continuation of sound in a physical space after the original sound is produced. Artificial reverb simulates the acoustic properties of a physical space, such as a room or a cave. The application of reverb to a sound source is achieved by mixing together the original sound source (dry signal) with a reverberated version of itself (wet signal), the latter having passed through a reverb effect.

See also: [decay \(time\)](#), [dry signal](#), [wet signal](#), [diffuse tail](#).

RMS level

RMS (root mean square) level calculates an averaged audio signal level over a short window of time (typically of the order of a few milliseconds). This is distinct from instantaneous peak level which is the audio level at the precise moment of inquiry.

roll-off

Slope of attenuated frequencies beyond the cut-off frequency of a filter.

sample rate

Number of samples per second used to convert an analog signal to a digital signal. Measured in Hz.

See also: [sampling interval](#).

sampling interval

Time interval between samples during an analog to digital signal conversion.

See also: [sample rate](#).

Screamserver library

Connects Scream Tool to a running instance of a game for auditioning and testing purposes.

See also: [Scream library](#), [Sndstream library](#), [Scream Tool](#).

Scream library

Controls the underlying audio rendering synthesizer, and coordinates playback of Sounds contained in Banks.

See also: [Screamserver library](#), [Sndstream library](#), [Scream Tool](#).

Scream Tool

Authoring environment used by audio designers to create game audio content, in the form of Sounds, for deployment to the Scream library.

See also: [Screamserver library](#), [Sndstream library](#), [Scream library](#).

semitone

A semitone, or half-step, is the interval between two adjacent notes on a 12-note equal-tempered octave scale. In other words, a semitone is one twelfth of an octave.

See also: [tone](#), [octave](#).

smart pan

A simple distance simulation mechanism based on gain levels; it provides an alternative to a mechanism based on three-dimensional coordinates. Louder Sounds are assumed to be closer, and are therefore panned wider. Softer Sounds are assumed to be more distant, their panning collapsing to a point source.

See also: [pan](#), [panning](#).

Sndstream library

An add-on to the Scream library for streaming audio files from external media. Sndstream provides a range of features for manipulating, queuing, and transitioning streams. Once initialized, Streams can also be manipulated by the Scream API calls (along with Scream Sounds).

See also: [Screamserver library](#), [Scream library](#), [Scream Tool](#).

solo

To enable auditioning a particular Sound or Group, while muting other non-soloed Sounds/Groups that may be playing.

See also: [mute](#).

Sound

In Scream, a Sound is a playable unit of audio that can be triggered in a game. Sounds consist of references to audio assets, plus a script that specifies how to articulate the assets at run time. Sounds are exported from Scream Tool in Banks, and then loaded into the Scream library for playback.

See also: [Bank](#), [Grain](#), [CCSound](#).

Sound register

Also known as a local register.

See also: [local register](#).

Stream

A Stream is a reference to audio data stored on disk (or other media) using a supported audio codec, and intended for streaming playback. Streams encapsulate one or more channels of audio content, and are played back on a single synth voice. Streaming enables playback of large audio files using a relatively small amount of memory.

See also: [channel](#), [codec](#), [path group](#), [Sndstream library](#), [Waveform](#).

Stream definition

When creating multi-Layer Stream files with Stream Creator (a component of Scream Tool), you specify file contents (input files used for each Bitstream, and Bitstream panning properties) using a Stream definition. Stream definitions are specific to each multi-Layer Stream file you create.

See also: [Stream template](#), [multi-Layer Stream File](#), [Layer](#), [Bitstream](#), [.scd](#), [.xvag](#).

Stream template

When creating multi-Layer Stream files with Stream Creator (a component of Scream Tool), you specify the file structure (number of Layers, number of Bitstreams per Layer, number of channels per Bitstream, encoding properties, and so on) using a Stream template. Stream templates can be used for multiple multi-Layer Stream files.

See also: [Stream definition](#), [multi-Layer Stream File](#), [Layer](#), [Bitstream](#), [.scd](#), [.xvag](#).

Stream transition

You can start a new Stream as a coordinated transition from an existing Stream. Stream transitions are designed for music-oriented transitions and can use synchronization data contained in an associated MIDI file to coordinate the transition on a musical boundary, such as measures and measure subdivisions.

See also: [MIDI \(Musical Instrument Digital Interface\)](#), [sync clock](#), [.mid](#).

subwoofer

Loudspeaker for deep, low-pitched sounds ranging from 3 to 120 Hz. Used to project output from the LFE channel.

See also: [LFE \(low frequency effect\)](#).

superframe

A property of ATRAC9™ audio files, a superframe consists of a constant bitrate (CBR) packet comprised of four variable bitrate (VBR) subpackets.

See also: [quantization noise gradient](#), [.at9](#).

surround sound

An extension to the stereo (two-channel) audio system. Surround sound systems have additional channels to supply audio to speakers positioned at the rear and sides of the listener, as well as to a Center speaker (positioned close to the viewing screen), and an LFE channel. For instance, 5.1 audio has six channels, consisting of two stereo pairs (at front and rear), a center channel, and an LFE channel

See also: [LFE \(low frequency effect\)](#).

sustain

The third stage of an ADSR volume envelope.

See also: [ADSR envelope](#).

sync clock

Synchronization clock used for timing musically coordinating Stream transitions or overlays.

See also: [Stream transition](#).

synthesizer, synth

In the game audio context, a synthesizer is an audio rendering engine that supplies audio data to the output audio library/driver based on instructions from a higher level articulation engine such as Scream.

See also: [NGS](#), [NGS2](#).

tempo

The speed that a musical piece is played. Tempo is usually measured in beats per minute.

See also: [beat](#), [measure](#), [time signature](#)

tick

In Scream, a tick is a unit of processing granularity used for executing Sound scripts. Ticks occur at a rate of 240 per second (240 Hz). One tick, therefore, is equivalent to 4.166 milliseconds or 0.004166 seconds.

time signature

Notation to indicate the number of beats per measure and the note value of the beat. It is typically represented as two numbers stacked above one another: the top number representing the number of beats per measure and the bottom number representing the note value for a beat. For note values, 8 stands for an eighth note, 4 stands for a quarter note, 2 for a half note, and so on.

See also: [beat](#), [measure](#), [tempo](#).

tone

A tone, or whole-step, is the interval of two semitones.

See also: [semitone](#), [octave](#).

transfer function

A function defining input and output that does not depend on time. In Scream, the effect curves used with CCSounds and the attenuation curves used in distance models are both examples of transfer functions.

transposition

Also known as pitch transposition.

See also: [pitch transposition](#).

voice

In Scream, *voice* refers to a voice on the underlying synthesizer; for example the NGS2 synthesizer on the PlayStation®4 platform. Waveforms and Streams encapsulate one or two channels of audio data and map, correspondingly, to a mono or stereo synth voice. Sounds can contain multiple Waveforms and Streams, and therefore may require many synth voices for playback.

See also: [NGS](#), [NGS2](#), [synthesizer](#), [synth](#), [voice stealing](#).

voice stealing

In a scenario in which there are no free voices, the Scream voice allocator can *steal* voices for new voice requests from active voices that have a lower priority setting than the requested voice(s). Voice stealing applies to both Waveforms and Streams.

See also: [NGS](#), [NGS2](#), [synthesizer](#), [synth](#), [voice](#).

volume ducking

Also known as ducking.

See also: [ducking](#).

volume group

Also known as Group.

See also: [Group](#).

Waveform

A Waveform is a reference to audio data stored in a Bank using a supported audio codec, and intended for memory-resident playback. Waveforms encapsulate one or more channels of audio content, and are played back on a single synth voice.

See also: [Bank](#), [channel](#), [codec](#), [Stream](#).

wet signal

Audio signal after some form of effects processing, such as reverb. Wet signal is processed signal only. Often, wet signal is later mixed together with its unprocessed counterpart, known as dry signal.

See also: [decay \(time\)](#), [dry signal](#), [diffuse tail](#), [reverb \(reverberation\)](#).

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2 File Extensions

.at9

An ATRAC9™ file (Adaptive TTransform Acoustic Coding 9, also known as AT9); a Sony proprietary compressed file format.

See also: [quantization noise gradient](#), [superframe](#).

.bank

The working file format used in Scream Tool, a Bank file stores data for Scream Sounds in a design-time XML format. This data consists of control data (such as property values and Sound scripts), audio data representing Waveforms (that is, memory-resident playback assets), and pointers to audio data representing Streams (that is, streaming playback assets). Using the BankMerge/Build utility, you can convert design-time BANK files to runtime BNK files, and merge multiple BNK files into a composite BNK file.

See also: [.bnk](#), [Bank](#), [Sound](#), [Stream](#), [Waveform](#).

.bnk

A platform-specific binary file exported from Scream Tool for deployment on target PlayStation® platforms. This data consists of control data (such as property values and Sound scripts), audio data representing Waveforms (that is, memory-resident playback assets), and pointers to audio data representing Streams (that is, streaming playback assets). In addition to exporting BNK files from Scream Tool, you can also build BNK files offline using the BankMerge/Build utility.

See also: [.bank](#), [Bank](#), [Sound](#), [Stream](#), [Waveform](#).

.bus

A binary, platform-specific buss preset file, exported from Scream Tool, and containing one or more buss effect presets. To use buss presets in the Scream library, you must export a binary buss presets file.

See also: [.bussconfig](#), [buss](#), [effect](#).

.bussconfig

A design-time file in an XML format containing one or more buss presets. Design-time buss presets files can easily be exchanged with other audio designers. You can convert and merge multiple BUSSCONFIG files offline using the BankMerge/Build utility.

See also: [.bus](#), [buss](#), [effect](#).

.distmodel

A design-time file in an XML format containing one or more distance model presets. Design-time distance model presets files can easily be exchanged with other audio designers. You can merge multiple DISTMODEL files offline using the BankMerge/Build utility.

See also: [distance model](#), [.dml](#).

.dml

A binary, platform-specific distance model file, exported from Scream Tool, and containing one or more distance model presets. To use distance model presets in the Scream library, you must export a distance model presets file.

See also: [distance model](#), [.distmodel](#).

.gmx

A binary, platform-specific group mixer file, exported from Scream Tool, and containing a foundation mix, and one or more mix snapshot definitions, created in the Group Mixer. To use mix snapshots in the Scream library, you must export a binary group mixer file.

See also: [.groupmix](#), [mixing](#), [mix snapshot](#), [volume group](#).

.groupmix

A design-time file in an XML format containing a foundation mix, and one or more mix snapshot definitions. Allows you to reload mix snapshot definitions into the Group Mixer.

See also: [.gmx](#), [mixing](#), [mix snapshot](#), [volume group](#).

.ini

Text based file for storing buss presets. Note that INI files containing presets for pre-master submix and master buss effects must be created manually.

See also: [.bus](#), [buss](#), [effect](#).

.layout

Scream Tool workspace layout file.

.mid

A MIDI file. In Scream, MIDI files are used in conjunction with musically coordinated Stream transitions.

See also: [MIDI \(Musical Instrument Digital Interface\)](#), [Stream transition](#).

.scd

A Stream creation document file. Defines Stream templates and Stream definitions, used when creating multi-Layer Stream files with Stream Creator, a component of Scream Tool.

See also: [Stream template](#), [Stream definition](#), [multi-Layer Stream File](#), [Layer](#), [Bitstream](#), [.xvag](#).

.vag

A Sony proprietary compressed ADPCM-based file format.

See also: [ADPCM](#), [Stream](#), [Waveform](#).

.wav

An audio file format based on linear pulse-code modulation (LPCM) encoding, developed by Microsoft and IBM.

See also: [PCM](#), [Stream](#), [Waveform](#).

.xml

XML file used for exporting and importing Scream preferences. Also the underlying format of BANK, BUSSCONFIG, DISTMODEL, and GROUPMIX files.

See also: [.bank](#), [.bussconfig](#), [.distmodel](#), [.groupmix](#).

.xvag

A Sony-proprietary extensible audio data file format, used for multi-Layer Stream files. You can create XVAG files using Stream Creator, a component of Scream Tool.

See also: [Layer](#), [Bitstream](#), [multi-Layer Stream File](#), [Stream template](#), [Stream definition](#), [.scd](#).

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