Sound server

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*This article is about a form of computer program that runs in the background. For computers that stream audio over a network, see*[*media server*](https://en.wikipedia.org/wiki/Media_server)*.*

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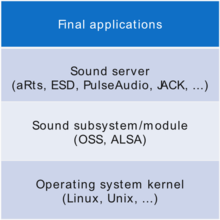
A **sound server** is [software](https://en.wikipedia.org/wiki/Software) that manages the use of and access to [audio](https://en.wikipedia.org/wiki/Sound_reproduction) devices (usually a [sound card](https://en.wikipedia.org/wiki/Sound_card)). It commonly runs as a [background process](https://en.wikipedia.org/wiki/Background_process).



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Sound server in an operating system[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=1)]

[](https://en.wikipedia.org/wiki/File:Soundserver_eng.png)

Description of layers that uses a Sound Server

In a [Unix-like](https://en.wikipedia.org/wiki/Unix-like) operating system, a sound server mixes different data streams and sends out a single unified audio to an output device. The mixing is usually done by software, or by hardware if there is a supported [sound card](https://en.wikipedia.org/wiki/Sound_card).

**Layers**[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=2)]

The "sound stack" can be visualized as follows, with programs in the upper layers calling elements in the lower layers:

* Applications (e.g. mp3 player, web video)
* Sound server (e.g. aRts, ESD, [JACK](https://en.wikipedia.org/wiki/JACK_Audio_Connection_Kit), [PulseAudio](https://en.wikipedia.org/wiki/PulseAudio))
* Sound subsystem (described as kernel modules or drivers; e.g. [OSS](https://en.wikipedia.org/wiki/Open_Sound_System), [ALSA](https://en.wikipedia.org/wiki/Advanced_Linux_Sound_Architecture))
* Operating system kernel (e.g. [Linux](https://en.wikipedia.org/wiki/Linux), [Unix](https://en.wikipedia.org/wiki/Unix))

**Motivation**[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=3)]

Sound servers appeared in Unix-like operating systems after limitations in [Open Sound System](https://en.wikipedia.org/wiki/Open_Sound_System) were recognized. OSS is a basic sound interface that was incapable of playing multiple streams simultaneously, dealing with multiple sound cards, or streaming sound over the network.

A sound server can provide these features by running as a [daemon](https://en.wikipedia.org/wiki/Daemon_(computer_software)). It receives calls from different programs and sound flows, mixes the streams, and sends raw audio out to the audio device.

With a sound server, users can also configure global and per-application sound preferences.

**Diversification and problems**[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=4)]

As of 2012 there are multiple sound servers; some focus on providing very low latency, while others concentrate on features suitable for general desktop systems. While diversification allows a user to choose just the features that are important to a particular application, it also forces developers to accommodate these options by necessitating code that is compatible with the various sound servers available. Consequently, this variety has resulted in a desire for a standard API to unify efforts.

List of sound servers[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=5)]

* [aRts](https://en.wikipedia.org/wiki/ARts)
* [Enlightened Sound Daemon](https://en.wikipedia.org/wiki/Enlightened_Sound_Daemon)
* [JACK](https://en.wikipedia.org/wiki/JACK_Audio_Connection_Kit)
* [Network Audio System](https://en.wikipedia.org/wiki/Network_Audio_System)
* [PipeWire](https://en.wikipedia.org/wiki/PipeWire)
* [PulseAudio](https://en.wikipedia.org/wiki/PulseAudio)
* [sndio](https://en.wikipedia.org/wiki/Sndio) - [OpenBSD](https://en.wikipedia.org/wiki/OpenBSD) audio and MIDI framework

**Streaming**[[edit](https://en.wikipedia.org/w/index.php?title=Sound_server&action=edit&section=6)]

* [Icecast](https://en.wikipedia.org/wiki/Icecast)
* [SHOUTcast](https://en.wikipedia.org/wiki/SHOUTcast)

References