Dolby Atmos

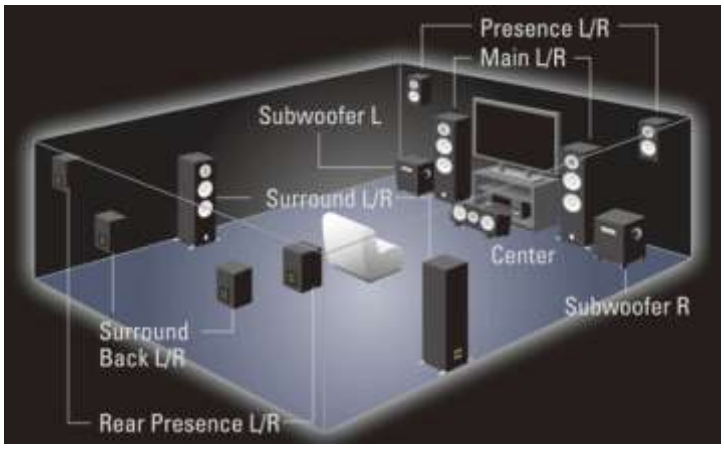
Modified from Wikipedia, the free encyclopedia

Dolby Atmos is the name of a surround sound technology announced by Dolby Laboratories in April 2012 and released in June that year, first utilized in Disney and Pixar's animated film *Brave*. Other notable Dolby Atmos films are *Gravity*, *The Revenant*, *Mad Max: Fury Road*, *La La Land*, *Hacksaw Ridge* and *My Little Pony: The Movie*.

History

The first installation was in the Dolby Theater in Los Angeles, for the premiere of *Brave* in June 2012. Throughout 2012, it saw a limited release of about 25 installations worldwide, with an increase to 300 locations in 2013. There were over 2,100 locations as of February 2015. Dolby Atmos has also been adapted to a home theater format and is the audio component of Dolby Cinema.

R.E.M.'s 1992 album *Automatic for the People* was remixed in Dolby Atmos for the album's 25th anniversary in 2017, making it the first major music release to utilize the technology.

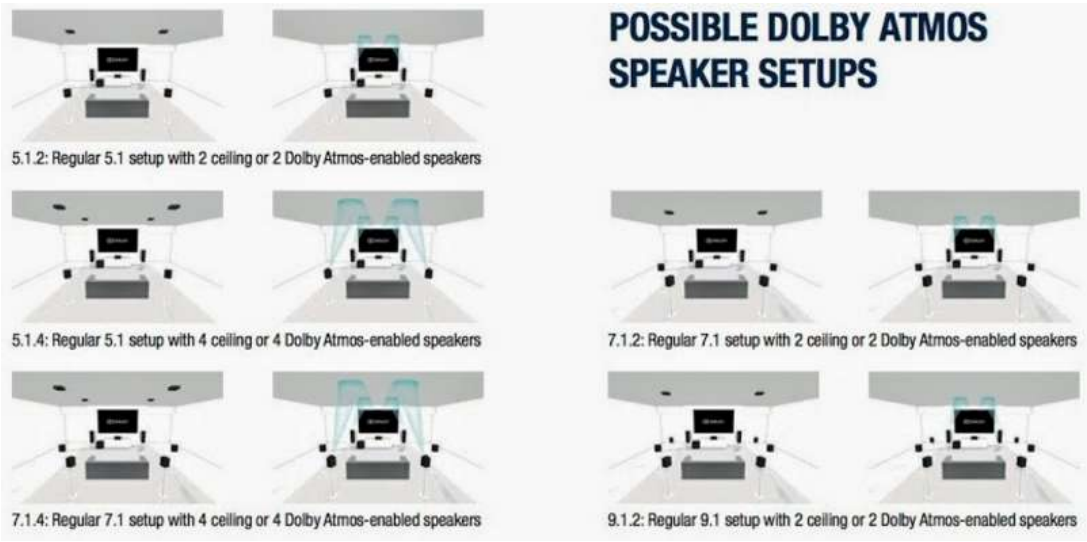


Technology

Dolby Atmos technology allows up to 128 audio tracks plus associated spatial audio description metadata (most notably, location or pan automation data) to be distributed to theaters for optimal, dynamic rendering to loudspeakers based on the theater capabilities. Each audio track can be assigned to an audio channel, the traditional format for distribution, or to an audio "object." Dolby Atmos by default, has a 10-channel 7.1.2 bed for ambience stems or center dialogue, leaving 118 tracks for objects.

Dolby Atmos home theaters can be built upon traditional 5.1 and 7.1 layouts. For Dolby Atmos, the nomenclature differs slightly: a 7.1.4 Dolby Atmos system is a traditional 7.1 layout with four overhead or Dolby Atmos enabled speakers.

With audio objects, Dolby Atmos enables the re-recording mixer using a Pro Tools plugin (available from Dolby) or a Dolby Atmos equipped large format audio mixing console such as AMS Neve's DFC or Harrison's MPC5, to designate the apparent source location in the theater for each sound, as a three-dimensional rectangular coordinate relative to the defined audio channel locations and theater boundaries.



During playback, each theater's Dolby Atmos system renders the audio objects in real-time such that each sound is coming from its designated spot with respect to the loudspeakers present in the target theater. By way of contrast, traditional multichannel technology essentially burns all the source audio tracks into a fixed number of channels during post-production. This has traditionally forced the re-recording mixer to make assumptions about the playback environment that may not apply very well to a particular theater. The addition of audio objects allows the mixer to be more creative, to bring more sounds off the screen, and be confident of the results.

The first generation cinema hardware, the "Dolby Atmos Cinema Processor" supports up to 128 discrete audio tracks and up to 64 unique speaker feeds.[8]The technology was initially created for commercial cinema applications, and was later adapted to home cinema. In addition to playing back a standard 5.1 or 7.1 mix using loudspeakers grouped into arrays, the Dolby Atmos system can also give each loudspeaker its own unique feed based on its exact location, thereby enabling many new front, surround, and even ceiling-mounted height channels for the precise panning of select sounds such as a helicopter or rain.

Consumer implementations

Home theater version

At the end of June 2014, Dolby Labs' hardware partners announced that Dolby Atmos would soon be coming to home theaters.

Among them were several established manufacturers of audio-visual home entertainment devices announcing new products that have now brought Dolby Atmos into home theaters across the globe. Products offered range from premium home cinema receivers and preamplifiers to mid-range home-theater-in-a-box (HTiB) packages of well-known brands such as Denon, Marantz, Onkyo, Pioneer and Yamaha plus further models from lesser-known manufacturers and brands. On June 4, 2018, Apple announced that tvOS 12 for AppleTV 4K will support Dolby Atmos when released in Fall 2018.

The first movie to be released on Blu-ray with Dolby Atmos was *Transformers: Age of Extinction*. The first video game to use Dolby Atmos was *Star Wars: Battlefront* with a special agreement between EA and Dolby Laboratories.This game uses HDMI bitstreaming from the PC to deliver Atmos audio to consumer Audio-Visual Receivers. Overwatch and Battlefield 1 for PC also have Atmos audio. On the Xbox One side, Crackdown 3 and Gears of War 4 also support Atmos.

Home theater implementation—differences from commercial implementations

Because of limited bandwidth and lack of processing power, Atmos in home theaters is not rendered the same way as in cinemas. A spatially-coded substream is added to Dolby TrueHD or Dolby Digital Plus. This substream is an efficient representation of the full, original object-based mix. This is not a matrix-encoded channel, but a spatially-encoded digital signal with panning metadata. Atmos in home theaters can support 24.1.10 channels and uses the spatially-encoded object audio substream to mix the audio presentation to match the installed speaker configuration.

In order to reduce the bitrate, nearby objects and speakers are clustered together to form aggregate objects, which are then dynamically panned. The sound of the original objects may be spread over multiple aggregate objects to maintain the power & position of the original objects. The spatial resolution (and hence the strength of the clustering) can be controlled by the filmmakers when they use the Dolby Atmos Production Suite tools. Dolby Digital Plus has also been updated with Atmos extensions.

Headphone and Smartphone version

Dolby Atmos also has headphone implementations for PCs, the Xbox One and mobile phones. They work by converting the Atmos channels into a virtual Binaural 360° output using the usual two headphone speakers. This technique is an improvement on the previous Dolby Headphone technology, though mainly because it simply adds the extra Atmos channels.

With Windows 10, users can experience Atmos audio using headphones, and they need to be running Version 1703 Creators Update, available using Windows Update. Because it is binaural technology, any headphones or earphones can ultimately be used, however officially certified Dolby headphones usually perform better.

Dolby Atmos has smartphone implementations for devices including but not limited to the Razer Phone, the ZTE Axon 7, and the Samsung Galaxy S9/S9+,Lenovo K8 Note. This implementation uses both the binaural headphone technology and a dual loudspeaker virtual surround sound implementation.