



FREQUENTLY ASKED QUESTIONS ABOUT DOLBY ATMOS[®] FOR THE HOME

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Q: What is Dolby Atmos?

Dolby Atmos[®] is a revolutionary new audio technology that transports you into extraordinary entertainment experiences.

- Fills your room with captivating sound
 - Sound comes from all directions, including overhead, to fill the room with astonishing clarity, richness, detail, and depth.
- Puts sounds into motion all around you
 - The specific sounds of people, music, and things move all around you in multidimensional space, so you feel like you are inside the action.
- Delivers the full impact of the artist's work
 - Artists have amazing new capabilities to tell their stories, accent their games, or perform their music to achieve the greatest expressive impact.
- Moves your mind, body, and soul
 - Sound excites your senses and inspires your emotions, flowing around you and connecting with you to create a more profoundly moving experience.

Q: How does Dolby Atmos audio work?

Until now, cinema sound designers have had to mix independent sounds together into channels for soundtrack creation. A discrete sound, such as a helicopter, has been assigned to an individual channel rather than precisely to where it would occur naturally in the scene. While a sound can move across channels, there's no height dimension. For example, you might hear the helicopter from a side channel and not above you. This approach limits your audio experience because it can't come close to matching the way you hear in real life, with sounds coming from every direction.

Dolby Atmos is the first home theater system that is based not on channels, but on audio objects. What is an *audio object*? Any sound heard in a movie scene—a child yelling, a helicopter taking off, a car horn blaring—is an audio object. Filmmakers using Dolby Atmos can decide exactly where those sounds should originate and precisely where they move as the scene develops.

Thinking about sound in this way eliminates many of the limitations of channel-based audio. In a channel-based system, filmmakers have to think about the speaker setup: Should this sound come from the left rear surrounds or the left side surrounds? With Dolby Atmos, filmmakers just have to think about the story: Where is that yelling child going to run? How will the helicopter move overhead after takeoff? The Dolby Atmos system, whether in the cinema or a home theater, has the intelligence to determine what speakers to use to precisely recreate the child's movement in the way the filmmakers intend. They can now precisely place and move sounds as independent objects in multidimensional space, including anywhere overhead, so you can hear them as you would naturally.

A Dolby Atmos home theater is also far more flexible and adaptable than channel-based home theater. In a channel-based system with channel-based content, the number of playback



speakers is fixed: a 7.1 system consisting of seven speakers and one subwoofer is used to play 7.1 content. Additionally, there is no height information in the content. With Dolby Atmos, in contrast, you have amazing flexibility: the format provides even richer, more detailed sound by rendering to overhead or height speakers and/or to more than seven speakers at the listener level. As you add speakers, a Dolby Atmos enabled receiver will use them to create even more fantastic, immersive audio.

With the revolution in audio that is Dolby Atmos, sound designers are freed from channel restrictions. Sounds flow above and around you in step with the visuals, bringing a new sense of height and reality to your listening experience. Dolby Atmos helps weave the audio story to match what's happening on the screen. It puts you in the middle of the action—in ways you have never experienced before.

Q: What is the difference between Dolby Atmos in the cinema and Dolby Atmos in the home?

The cinema, with its giant screen and massive sound system, will always be the reference for the ultimate entertainment experience. While home theaters have fewer speakers, the Dolby Atmos home experience is extremely powerful. It combines traditional home theater speaker layouts with many new possible speaker positions, including either ceiling-mounted speakers or new Dolby Atmos enabled speakers that reproduce sounds coming from above you. The impact of either in-ceiling or Dolby Atmos enabled speakers is breathtaking; your room fills with realistic, multidimensional sound that places you directly in the center of the entertainment experience.

Q: How does Dolby Atmos cinema content transition to home theaters?

The Dolby Atmos experience in the cinema is so powerful and flexible because of its revolutionary use of audio objects. To deliver the full object-based soundtrack to home theaters, Dolby developed new home authoring tools and new encoding methods that take into account the spatial information of the sound objects to efficiently encode them in Dolby® TrueHD and Dolby Digital Plus™. This spatial coding is not a channel-based, matrix-encoding system like Dolby Pro Logic® II or Dolby Pro Logic IIz. Instead, this fundamentally new coding technique allows all the audio objects created for the cinema to be used in the home theater. Nothing is lost.

Initially, home theaters will be able to play Dolby Atmos content on Blu-ray™ discs or through streaming video services. No matter the source, when a Dolby Atmos stream is fed to a Dolby Atmos compatible A/V receiver, the receiver will render the object-based audio to your home theater's unique speaker configuration to precisely recreate the sound the filmmakers intended. Because the object-based audio mix is delivered to home theaters, Dolby Atmos has the ability to adapt to extremely diverse speaker setups, from systems with five speakers on the floor and two speakers producing overhead sound to Dolby Atmos supersystems with 24 speakers on the floor and 10 overhead speakers.

Q: Who is creating content, such as movies, for Dolby Atmos in the home?

Globally, more than 100 cinema blockbusters have been released featuring Dolby Atmos soundtracks since 2012, and many more are on the way. Major Hollywood studios are partnering with Dolby to create home video versions of current box office releases and previously released favorites. You will start to see Dolby Atmos movies for the home enter the market in 2014, gradually ramping up in 2015. In addition to global studio partnerships, Dolby is partnering



with game and music content creators to take advantage of Dolby Atmos technology for future home theater use.

Q: What home setup do I need to experience Dolby Atmos?

To experience this sound revolution, you'll need a way to play or stream Dolby Atmos content, and to create your own Dolby Atmos home theater environment.

Options to Play or Stream Content

1. You can play Dolby Atmos content from a Blu-ray Disc™ through an existing Blu-ray Disc player. Be sure you have a player that's fully compliant with Blu-ray specifications.*

Or

2. You can stream content from a compatible game console, Blu-ray, or streaming media player.

In both cases, be sure to set your player to bitstream output.** Note that Dolby Atmos is compatible with the current HDMI® specification (v1.4 and later).

You then have several options for configuring your home playback system.

You'll be able to assemble your own system from a wide range of available A/V components, starting with an A/V receiver (AVR) or pre-processor that supports Dolby Atmos. Many leading AVR manufacturers are introducing products in 2014 that support Dolby Atmos for the home. Several companies will offer complete home-theater-in-a-box solutions that support Dolby Atmos. These systems offer you the benefits of extraordinary Dolby Atmos sound together with the convenience and simplicity of an all-in-one system.

Watch for announcements throughout the year.

* You will not need to replace your Blu-ray player as long as it fully conforms to the Blu-ray specification. Current-generation Blu-ray players, and most older players, are compatible. You should check with the Blu-ray player manufacturer if you encounter problems. Some Blu-ray players default to secondary audio, a playback mode where third party content is mixed with the primary soundtrack and output as a Dolby Digital signal. Be sure to turn this feature off to insure decoding and playback of Dolby Atmos content by your AVR.

** Decoding and rendering of Dolby Atmos content is managed entirely by the A/V receiver. To properly pass the Dolby Atmos audio to the AVR, source devices must be connected to the AVR via HDMI and set to audio bitstream out.

Q: I already have a home theater. Do I have to replace all of my current speakers to build a Dolby Atmos system?

No.

Many people now have 5.1 or 7.1 systems with a subwoofer and either five or seven speakers positioned at or about at ear level. Many of these speakers will work without a problem in a Dolby Atmos system.

However, overhead sound is a vital part of the Dolby Atmos experience. Many current home theaters aren't capable of producing overhead sound, but there are a number of options for adding this capability to any room.



Q: How do I get sound coming from above?

The obvious answer is to install speakers in the ceiling. Most conventional ceiling speakers will work in a Dolby Atmos home theater.

But installing ceiling speakers may not be possible or desirable for you. Installing speakers in or on your ceiling and running the necessary wiring can be expensive and time consuming. If you rent your home, the property owner may not allow it. And if your ceiling is made of a material such as concrete, plaster, or brick, installing speakers in the ceiling is impossible. Finally, you may not like the look of overhead speakers.

Q: How can I get overhead sound if I don't mount speakers in my ceiling?

Use speakers equipped with Dolby Atmos enabled technology.

Through our knowledge of psychoacoustics and sound physics, we've developed speakers that can create overhead sound even though they're only a few feet off the floor. These speakers fire sound upward, where it reflects off the ceiling to produce an incredibly lifelike recreation of overhead sound—you really have to hear them to believe them.

You will be able buy integrated Dolby Atmos enabled speakers that include both traditional forward-firing speakers and upward-firing speakers in one speaker cabinet. (Those speakers have two sets of posts, one for the traditional speaker and one for the upward-firing Dolby Atmos enabled speaker.)

But if you already have conventional speakers you like, you can simply buy Dolby Atmos enabled add-on speaker modules. These include only the upward-firing speakers. You can put the add-on modules on top of your current speakers or on another nearby surface.

Q: Will Dolby Atmos enabled speakers work in my room?

Dolby Atmos enabled speakers can produce an incredibly accurate Dolby Atmos experience in many kinds of rooms. You'll get the best sound if your ceiling is flat (not vaulted or angled) and made of an acoustically reflective material, such as drywall, plaster, concrete, or wood.

While we designed the technology for rooms with ceiling heights of 8 to 9 feet (2.4 to 2.7 meters), our testing indicates that you can still hear incredible Dolby Atmos sound in rooms with ceilings as high as 14 feet (4.3 meters), though the effect may become more diffuse in rooms with higher ceilings.

Recessed lighting fixtures, chandeliers, crown molding, and heating or air conditioning vents in your ceiling do not noticeably interfere with the Dolby Atmos experience.

Q. What is the smallest setup that Dolby recommends? What is the largest?

Because audio that originates from overhead is a key contributor to the Dolby Atmos experience, Dolby recommends using at least two speakers to generate overhead audio elements. This gives the minimal ability to move audio from left to right above the listener. The addition of four or more speakers to generate overhead audio elements provides the ability to move audio left to right and front to back above the listener. This provides greater precision to the Dolby Atmos experience.

For high-end home theaters, a 7.1.4 system (a traditional 7.1-channel-based layout with four



overhead or Dolby Atmos enabled speakers) will provide a great listening experience. That being said, Dolby Atmos can support home theater systems with up to 34 speakers, in a 24.1.10 configuration: 24 speakers on the floor and 10 overhead speakers.

However, Dolby Atmos content is not tied to any specific playback configuration. Whether you have a full 7.1.4 system or a 5.1.2 system, your receiver will get the same content and play it back in a way that takes full advantage of your specific setup.

Q: If Dolby Atmos allows me to add more speakers, why do I see A/V receivers with just 11 channels?

Many hardware partners are building or planning to build Dolby Atmos enabled A/V receivers and speakers. Those partners decide what product configurations make the most sense for their customers. But Dolby Atmos for the home is almost unlimited. One of our hardware partners is planning to release an A/V receiver with 32 channels.

Q: If this is not a channel-based system, why are there predefined speaker positions?

While the Dolby Atmos algorithm is capable of rendering audio to virtually any speaker position, we defined 34 designated positions for speakers on the floor and overhead to simplify the setup process. By using these predefined positions, you can more easily configure your system.

We also defined a few “reference” speaker configurations to ensure that early customers could have a great experience while having the option to keep most of the equipment they already have. Among those reference setups are the 5.1.2 configuration, which involves adding two ceiling or Dolby Atmos enabled speakers to a traditional 5.1 system, and the 7.1.4 configuration, which starts with a traditional 7.1 system and adds four ceiling or Dolby Atmos enabled speakers. These configurations also ensure that you can play content mixed in legacy channel-based audio.

But we believe this is just the beginning. Because the Dolby Atmos object-based audio system is so adaptable, you can use many other speaker configurations. No matter what system you build, the Dolby Atmos format and system will adapt itself to output the best audio experience possible.

Q: How will I get Dolby Atmos movies?

We wanted to ensure that entertainment fans could get Dolby Atmos movies in the same ways they get movies now, on Blu-ray Disc or through streaming video services.

We invented new scalable algorithms and extensions to Dolby TrueHD, our Blu-ray format, and Dolby Digital Plus, which is used by leading streaming video providers. Both formats now support Dolby Atmos sound, meaning that you’ll be able to play Dolby Atmos movies from your Blu-ray player or through your digital media adapter.

Q: Should I buy Dolby Atmos content even if I don’t have new equipment?

The Dolby Atmos format was designed to be backward compatible, so it will play on both new and existing hardware platforms. We recommend you purchase the Dolby Atmos version of content whenever that is available. In the future, upgrading your equipment to Dolby Atmos



capable products will unlock the ultimate experience from Dolby Atmos content. In the meantime, you will get a great surround experience from traditional channel-based systems.

Q: What if I build a Dolby Atmos system but want to play content that isn't in Dolby Atmos?

A Dolby Atmos home theater can play any stereo, 5.1, or 7.1 content. Using the Dolby surround upmixer function in Dolby Atmos enabled AVRs, you can choose to have our technology automatically adapt that channel-based signal to use the full capabilities of your new system, including your overhead speakers, ensuring that you hear realistic and immersive sound.