



Why Dolby Atmos

assembled from Avid and Dolby resources

Dolby Atmos debuted in 2012 and is now supported in over 4,400 theaters globally. Dolby Atmos takes Dolby's traditional 5.1 and 7.1 surround sound setups a step further by adding a third, overhead dimension. You're no longer constrained to a stereo system or standard six- or seven-channel arrangement. This new cinematic technology adding overhead sound, was first applied in Pixar's motion picture "Brave" Then in July 2014, Dolby Laboratories announced plans to bring Atmos to home theater. The first television show to use this technology on disc was Game of Thrones.

Netflix started the Dolby Atmos ball rolling in 2019 by mandating that all content suppliers must provide Dolby HE (Home Theatre) 7.1.4 Mixes along with the prerequisite Stereo, 5.1 and 7.1 surround. Downmixes being done in a Dolby certified mix room was not a requirement, but each vendor was encouraged to meet the required Dolby Atmos HE specification. Moving forward to present day, most streaming providers, Netflix, Amazon Prime, Disney, MGM, Warner and more, list an up to spec Dolby Atmos HE mix room as part of their requirements for sound mix deliverables.

Where can I hear Dolby Atmos for Film and TV? Most cineplexes have one or more Atmos theatrical theatres catering to Atmos immersive releases. Streaming subscription services such as Netflix, Amazon Prime, Disney are adding Atmos titles on an ongoing basis. Gaming is embracing Atmos on triple A console titles and moving to personal devices such as smart phones and tablets with independent game developers.

Where can I hear Dolby Atmos for music?

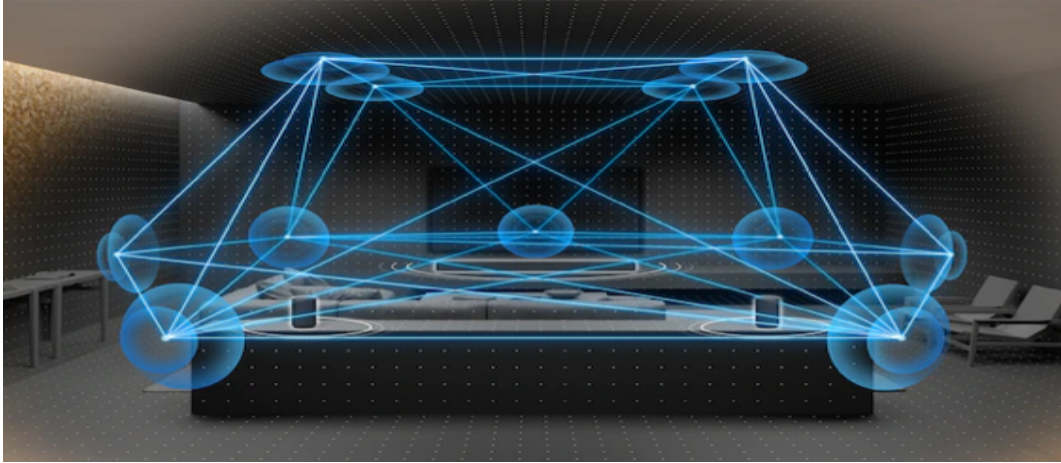
In December of 1999 the streaming service Tidal began supporting the immersive Dolby Atmos Music format. The announcement was initially met with excitement from audiophiles interested in hearing their favorite tunes in three dimensions, but that offer was limited to a handful of Android smartphones and tablets that supported the mobile version of Dolby's technology. In June 2021 Apple flipped the switch on two new features for its Apple Music subscription service, immersive Dolby Atmos spatial audio and lossless-quality streaming. Available across its array of IOS devices, earbuds and headphones. Come April 2022 Tidal content can now also be played in Dolby Atmos on Apple iPhone and Apple iPad via the TIDAL app.

Is Atmos a passing fad like Quadraphonic and 3D? No not at all, Atmos is here to stay. For music Apple Spatial and Tidal offer a constantly growing catalog of new music. Universal Music and Warner are delving into their artists back catalog to remix albums in Atmos. More and more, new releases are being offered in Dolby Atmos as well. What Atmos gives the artist is a new immersive landscape to realize their content in a way that has never been available. You can experience the Atmos immersive experience with earbuds, soundbars, home systems and even multi-channel car audio. These systems are becoming increasingly more affordable as more manufactures and developers invest in new ways to market immersive content.

Can I have Atmos in my home? With immersive audio systems now available at all price points it's no longer an exclusive club. Anyone can afford to experience immersive video, audio and gaming and more and more consumers expect it. Stereo and 5.1 surround are just some of the formats that are part of the overall Dolby Atmos experience. Current consumer hardware is optimized for speaker position in any environment. The soundbar with built-in microphones does it all for you, intelligently measuring the position of each speaker and optimizing sound to your room. The soundbar lets you enjoy Sound Field Optimization with or without optional speakers as there's no need to precisely place them. Activate the simple calibration process during initial setup or from the home menu which calibrates the sound bar and optional rear speakers to your room.

Consumer hardware optimized for speaker position in any environment

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Here are two examples how one can bring Dolby Atmos into their home

Entry level home Atmos system Amazon Echo Studio \$759.

Echo Studio delivers a multi-dimensional listening experience with music and TV in Dolby Atmos.

Five built-in speakers analyze the acoustics of any room and deliver an expansive soundscape with more depth and clarity. Dolby Atmos allows Echo Studio to fill the room to fully immerse you with its content.

<https://www.dolby.com/experience/consumer-speakers/amazon-echo-studio/#gref>



Top level home Atmos system Sony HT-A5000 5.1.2ch Dolby Atmos® Soundbar with SA-RS3S rear top firing speakers and SA-SW5 subwoofer + Firestick 4K TV \$2,649. <https://www.sony.ca/en/electronics/sound-bars/ht-a5000>



Why should my studio invest in mastering Dolby Atmos content?

Many traditional broadcasters are still broadcasting in stereo and 5.1 surround as are DVD releases. OTT subscription services have since replaced the DVD weekend rental stores and compete with traditional broadcasters by providing an on-demand subscription-based solution where the user decides what, when, where and on what device they consume the content of their choice.

Upgrading my facility to Atmos is expensive, where is my return on investment?

Upgrading to Dolby Atmos involves more speakers, faster computers, Dolby capable software and hardware rendering units with a completely different workflow. All of this is a significant investment which must be passed on to the show runner, producer, and client. They themselves are already experiencing changing deliverables from their distribution partners. In short, to continue growing their business, they will need to adapt to meet today's content expectations from the consumer. As content providers you need to be able to confidently meet their new delivery requirements.

What equipment do I need to mix and author Dolby Atmos content?

There are a number of DAW's and audio interfaces that can and do fit the requirements that are compatible with Dolby Atmos Renderer. (DAR) The most popular Dolby supported DAW available is Avid Pro Tools Ultimate software, combined with Avid HDX DSP PCIe cards and MTRX series of audio interfaces. Your monitoring is covered by your choice of many supported speaker models and brands that are inserted into The Dolby supplied DARDT (Dolby Atmos Room Design Tool) spreadsheet that confirms number of speakers, power and location. This is submitted to Dolby as a room design from which they will work with the end-user to fine-tune and meet what would be considered an agreed Dolby spec. This room design would technically meet Dolby's certification level which is no longer required.

What do I need to add Dolby Atmos to my workflow?

You will need the Dolby Atmos Renderer (DAR) professional mastering software that can be used either standalone on the same computer or in a professional post environment with multiple computers, plus a speaker configuration of 7.1.4 up to 9.1.6.

When and why do I need a Dolby Atmos hardware Renderer?

You will need a Dolby Atmos hardware Windows or Mac Renderer when you have a multiple Pro Tools workstations workflow such as to be found in a typical post environment. This would include a Pro Tools HDX Dialog stems player, M&E stem player, Master Dubber/Recorder and Video Satellite. In addition, this facilitates quick turnarounds of down mixes and re-renders with direct monitoring from the Renderers outputs for quality assurance.

If I have multiple Pro Tools workstations, do I have to synchronize all of these devices together

Yes you will need a master clock source such as an Avid Pro Tools Sync X synchronizer attached to each workstation in your system.

Do I need an Avid synchronizer connected to my Dolby Atmos Renderer?

Since you will be sending all your 7.1.4 beds and objects to the hardware renderer as Dante streams from your Dante equipped MTRX audio interface and router with 128 channels or MTRX Studio with 64 channels of Dante that won't be necessary.

What is Avid Pro Tools HDX and why do I need it?

Pro Tools HDX is a dedicated Pro Tools and third-party plugins DSP card that frees up the CPU for other processing duties. It allows for seamless punch-ins and punch-outs to the master ADM BFW file and provides track by track plugin delay compensation across the entire session as well near zero latency musician or voice over headphone cue mixes which is critical with seamless punching in and out recording.

Can I create a master Atmos file in DAR without a Dolby Atmos hardware Renderer?

Yes, you can create an Atmos master ADM BFW file in the DAR without a hardware Renderer.

I am a music producer I will only have one DAW what do I need to mix Dolby Atmos for Music?

With the new Apple Native Silicon M1/M2 computers the power has exponentially increased to the point that they can support both large track count sessions with many plug-ins and manage Dolby native rendering without requiring a dedicated render on a separate computer.

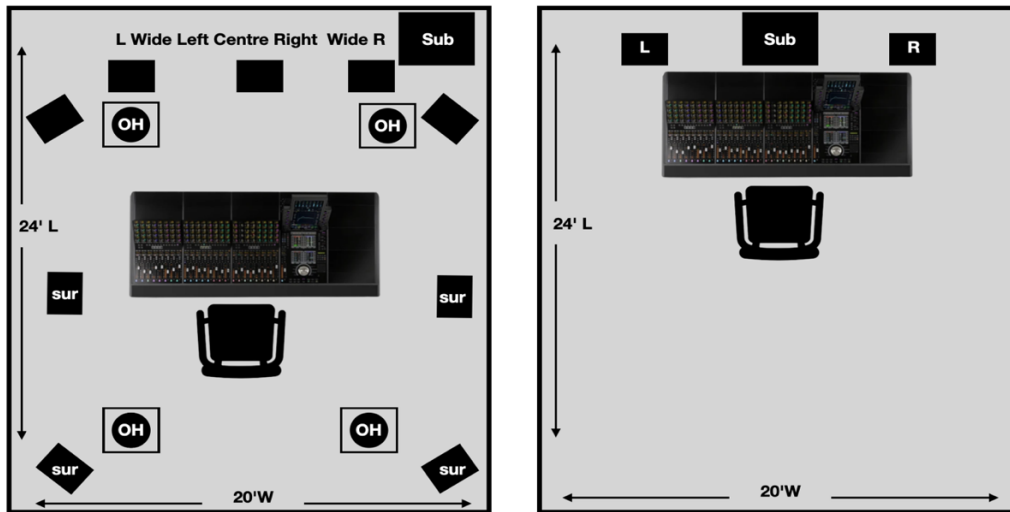
I see that with the Dolby Atmos post systems the audio interface must have Dante or MAD1 do I need this for Dolby Atmos Music Avid has just released a new product, the TB3, which is a Thunderbolt 3 option card that can be installed in the MTRX 2 or MTRX Studio. An ideal Atmos Music Setup would be an HDX card to manage Realtime plug-ins with ultra-low latency monitoring. In your Pro Tools playback engine you would choose HDX. The MTRX Studio with the TB3 card using AUXI/O would send the bed tracks and objects via Dolby Audio Bridge to the Dolby renderer for processing. Dante is not required with this set up

When will the Dolby Atmos Album Assembler be available for Native Silicon?

Dolby Atmos Album Assembler is under development for Apple M1/M2 Native Silicon ETA is June 2023

Now that I know what I need to upgrade to Dolby Atmos what about my room design?

Your room design for Dolby Atmos will differ from the traditional music studio layout where your mixing position is located close to the front wall or in a studio facing into the live room from the control room. With a Dolby Atmos layout your mix position will be the middle of the room with your bed speakers - front array, side and rear surrounds at a height of 3.9'. Your overhead speakers will be just ahead of you pointing down at your mix position and your rear overhead speakers just behind you pointing down to your mix position.



The example above of room length, width and ceiling height will be inserted in the Dolby Atmos Room Design Tool DARDT. The resulting calculations of speaker height and XYZ coordinates will be calculated to within centimetres of exact location. Fine-tuning will continue until all cells change to light green. Once your DARDT is complete (see below) you are ready to start purchasing speakers and mounts.

Dolby Atmos Music Studio

Speaker Layout Dimensions (ft)

Units	Length	Width	Height	Mix Position	Layout Type	Circle Level
Imperial	24.0	20.0	10.0	12.0	Equidistant	28.0

Calibration Level: 85 dB | Speaker Level: 7.1.4 | Music | Advanced mode enabled

Speaker	x (ft)	y (ft)	Height from Floor (ft)	hor angle	longitud. Elevation Angle	lateral Elevation Angle	Mounting Condition	Watts	Sensitivity	Watts required	Active Speaker Max Peak SPL	Headroom above Target SPL	Amplifier Model	Watts available	Amplifier Headroom	Delay
C	10.0	4.0	4.0	0°	0°	0°	Genetec S360A 80Hz BM	Away from Wall			127.0 dB	8.3 dB				3 ms
L/R	3.0	4.0	4.0	43°	0°	0°	Genetec S360A 80Hz BM	Away from Wall			127.0 dB	5.8 dB				1 ms
SR	4.3	1.3	0.0				QSC SB-7118	At Intersection of 2 walls	750 W	98.0 dB	8	463 W	Crown CD 2 600	850 W	2.0 dB	0 ms
Ls/Rs	2.0	12.0	3.9	90°	0°	0°	Genetec S360A 80Hz BM	Away from Wall			127.0 dB	11.3 dB				3 ms
Lsr/Rsr	2.0	20.0	3.9	135°	0°	0°	Genetec S360A 80Hz BM	Away from Wall			127.0 dB	8.2 dB				0 ms
Ltr/Htr	5.0	6.0	9.5	40°	43°	48°	Genetec S360A 80Hz BM	Against/In Ceiling			127.0 dB	11.7 dB				2 ms
Ltr/Hsr	5.0	18.0	9.5	140°	43°	48°	Genetec S360A 80Hz BM	Against/In Ceiling			127.0 dB	11.7 dB				2 ms

Equipment List Dolby Atmos Music Studio

Speaker Model	Count	Amplifier Model	Count	Unused
QSC SB-7118	1	Crown CD 2 600	1	0
Genetec S360A 80Hz BM	11			



Dolby Atmos Renderer

Dolby Atmos

Pros and Cons of DAPS and DAR

DAPS – Dolby Atmos Production Suite (discontinued, replaced by DAR)

General computer system overhead was typically overtaxed trying to run any DAW and DAPS at the same time

No HDX DSP processing

No automatic delay compensation for plugin in Pro Tools

No external sync to (WC) word clock or (Ref) video reference

No real time Re-renders

Complicated bussing

No punch in/out on master files

No speaker EQ

No speaker array support

No multi system support

In short DAPS was designed for Dolby Atmos pre-production not mastering

DAR – Dolby Atmos Renderer (replaces both Dolby Atmos Production Suite and Dolby Atmos Mastering Suite)

Native Apple silicon support, faster processing such as ADM exports

New and improved UI as well as performance enhancements

Import, export, and monitor high-resolution 96 kHz ADM BWF files

Windows compatibility

Create 5.1.2 re-renders

Retain your trim and downmix settings

Room EQ

Speaker delays now 1/10th MS instead of 1Ms increments now

Music Panner, Dolby Atmos Binaural, LTC Generator now bundled in DAR

Atmos send/returns plugins replaced by Pro Tools Aux IO

Control via the Dolby Atmos Renderer Remote

Comparison of Dolby Atmos Renderer to Dolby Atmos Production and Mastering Suites

	DAPS	DAMS	DAR
Single system workflow for Music, OTT etc.	Yes	No	No
Multi-system workflow for complex content production	No	Yes	Yes
Windows compatible	No	Yes	Yes
Mac compatible	Yes	Yes	Yes
EQ and room calibration support	No	Yes	Yes
Speaker array mode support	No	Yes	Yes
Remote connectivity	No	Yes	Yes
Native Apple Silicon compatibility	No	No	Yes

OTT (over-the-top) is a means of providing television and film content over the internet at the request and to suit the requirements of the individual consumer. The term itself stands for “over-the-top”, which implies that a content provider is going over the top of existing internet services.

Additional Mac and Windows compatibility info:

	Mac	Windows
Dolby Atmos Renderer on same computer as DAW	Yes	No
Dolby Atmos Renderer on separate computer from DAW	Yes	Yes
Dolby Audio Bridge	Yes	No
Dolby Atmos Music Panner plug-in	Yes	No
Dolby Atmos Binaural Settings plug-in	Yes	No
LTC Generator plug-in	Yes	No

Compatible Digital Audio Workstations

- Ableton Live*
- Apple Logic Pro*
- Avid Pro Tools
- Blackmagic Designs Resolve
- Merging Pyramix
- Steinberg Nuendo**

**Requires Dolby Atmos Music Panner*

***Connection to Dolby Atmos Renderer not yet supported in native Apple Silicon mode*

Overview of Pros and Cons of DAR and DAPS

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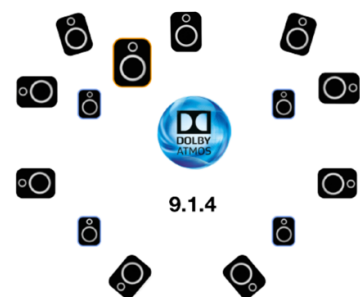
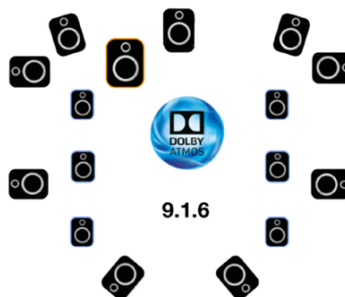
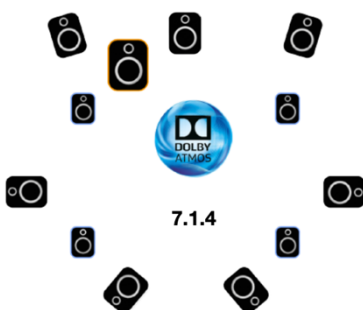
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10th of a MS increments now

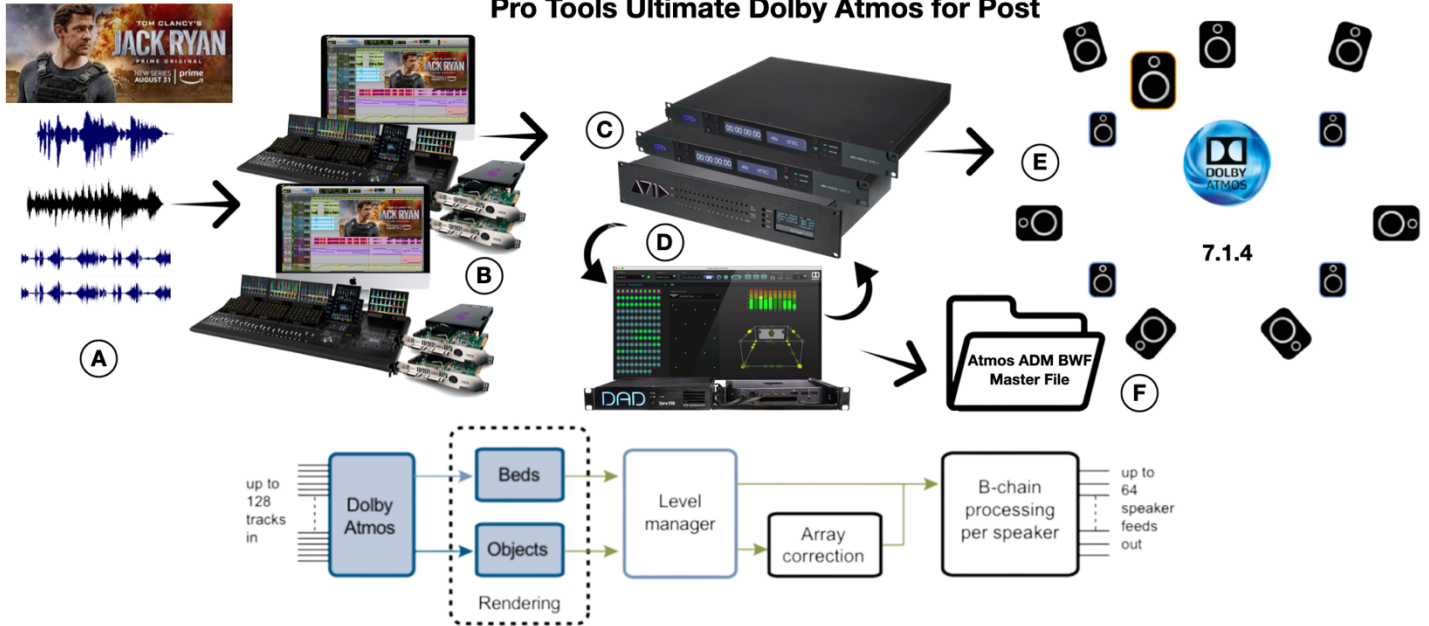
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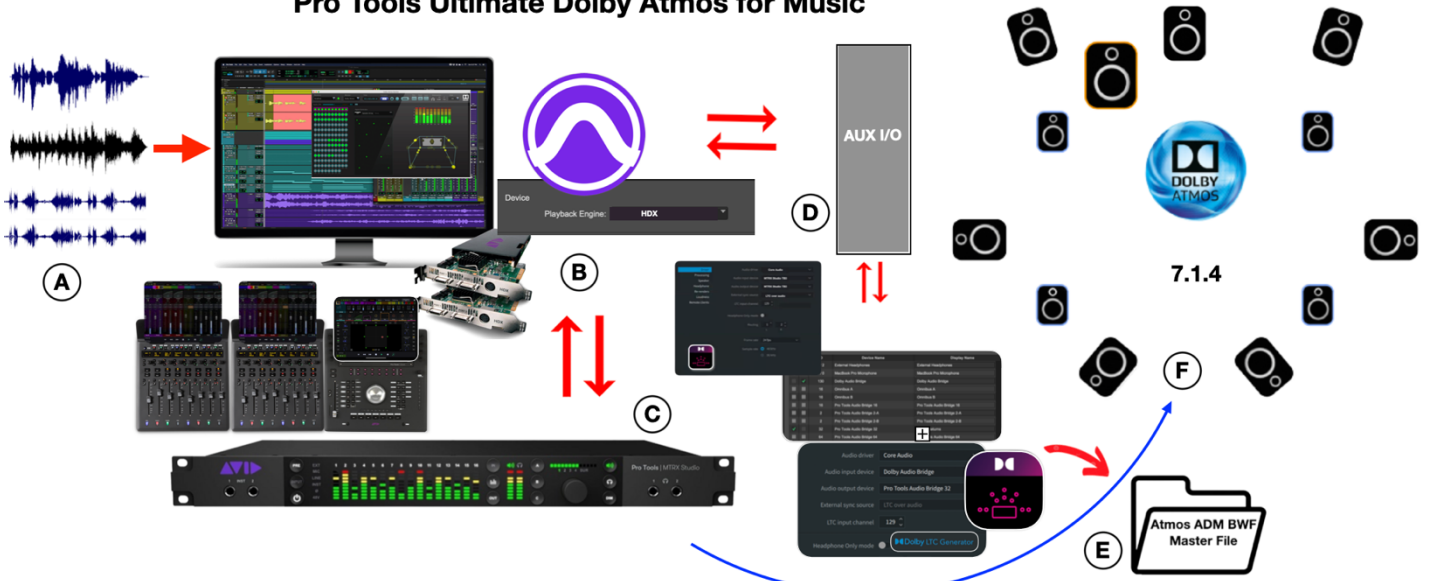
Pro Tools Ultimate Dolby Atmos for Post



- (A) Picture, Dialog, Music and FX stems
- (B) Pro Tools HDX + Eucon S1/S4/S6 surfaces
- (C) MTRX Audio interface & 2 SyncX
- (D) Dolby Atmos Dante or MADI Renderer
- (E) Atmos immersive speaker 7.1.4 system
- (F) Dolby Atmos ADM Master File

Note the arrows to and from the Dolby Renderer, when Pro Tool is playing into the MTRX all of your 7.1.4 and down mix monitoring is monitored through the outputs of the Renderer. This is your final quality control as you listen to the final print version of your ADM BWF file

Pro Tools Ultimate Dolby Atmos for Music



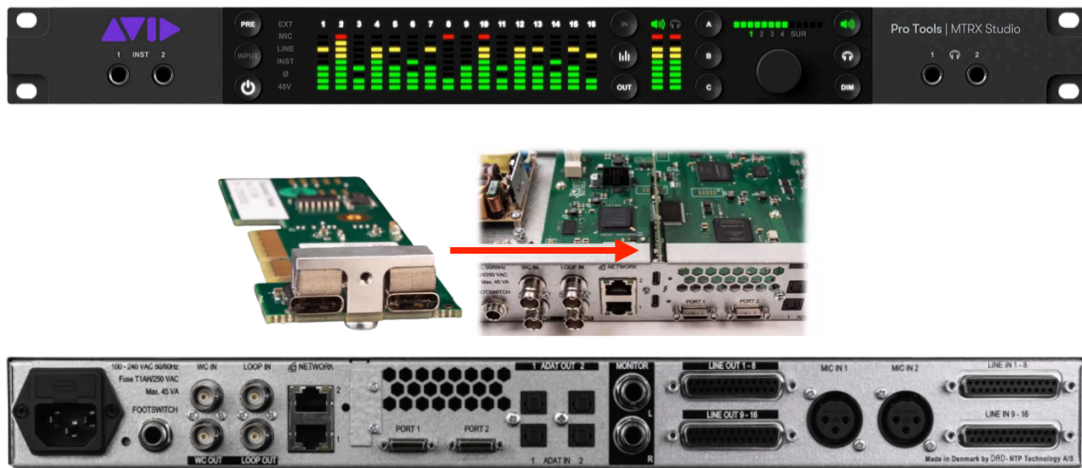
- (A) Session audio files
- (B) Pro Tools HDX & S1/4/6 series surfaces
- (C) MTRX Studio TB3 16 in by 16 analog out audio interface
- (D) AUX I/O bi-directional internal Pro Tools routing from Pro Tools to Dolby Atmos Renderer round trip to Pro Tools in one computer
- (E) Dolby Atmos ADM Master File
- (F) Dolby Atmos speaker 7.1.4 system

With Pro Tools HDX as the playback engine uses DSP for plugins, delay compensation and near zero latency tracking and monitoring. With Thunderbolt 3 route Pro Tools to AUX I/O and Dolby Audio Bridge process your mix in The Dolby Atmos Renderer and back through Pro Tools Audio Bridge back to Pro Tools to output your Dalby ADM BWF master file. No dedicated Dolby Renderer stand alone computer is required.

Wait a minute Is that Dolby Atmos for music drawing correct on that last page?

Yes, it is, you may have noticed something strange with the drawing. HDX is the main playback engine instead of Dolby Audio Bridge and it is routing Pro Tools tracks from Core Audio through Pro Tools AUX IO to the Dolby Audio Bridge into the Dolby Renderer and back to Pro Tools from the Pro Tools Audio Bridge. Pro Tools 2022.9 introduced AUX IO with a new way of routing any Core Audio anywhere you want without using Dante. How this is done is with the newly announced Avid Thunderbolt 3 option card that features 64 channels of bidirectional IO At 48kHz. Applications will be able to communicate with the Dolby Renderer, SFX, Sound management, Zoom, other DAWs, instruments and audio applications.

Install the Thunderbolt 3 option card in a new or previously purchased Avid MTRX Studio (yes that is what that cover plate between The network and DigiLink ports was for). The MTRX Studio was designed to be upgradeable, install the TB3 card and new have a new Audio interface that can communicate to any audio input or output source with Core Audio.



Also announced last NAMM show in April by Avid is the new MTRX II a second generation which is replacing the MTRX. New features are 256 channels of built in Dante and SPQ speaker tuning which previously required two Avid MTRX option cards.



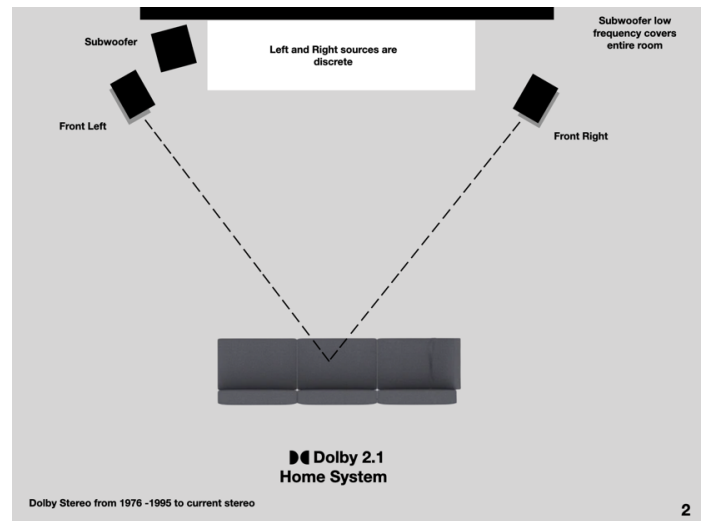
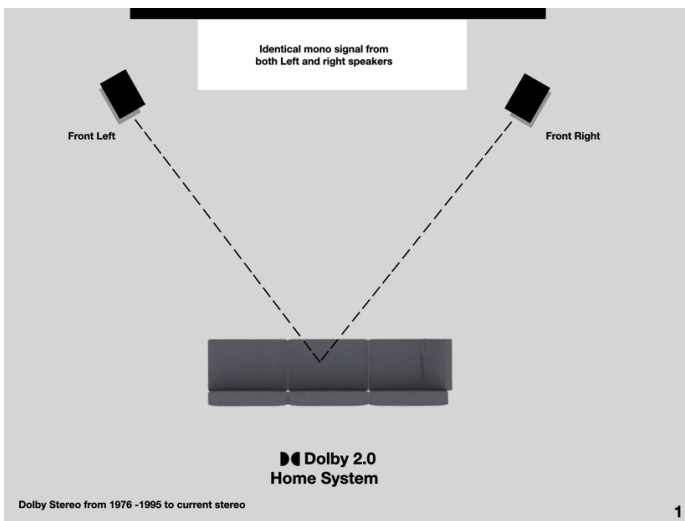
Features: Router is now 4096 x 4096 from 1500 x 1500, the Sum Matrix is 512 x 64 from 256 x 32 and now there are no option card limitations. You can populate the MTRX II with any combination of eight AD or DA cards.

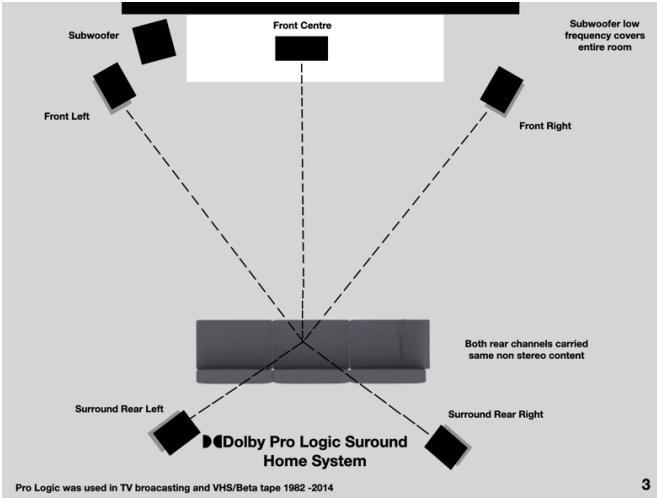
This is just a very brief overview of the new products shown by Avid at NAMM 2023 please contact Bryon, Hugo and Doug At Annex Pro for a discussion on features, workflow, pricing, and availability. Contact emails and phone numbers on the last page.



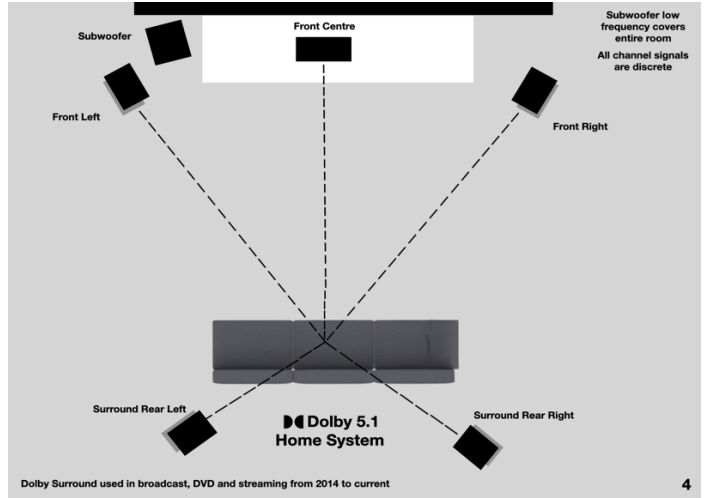
**DOLBY
ATMOS**

**From then to now
A short history of Dolby in film and music**

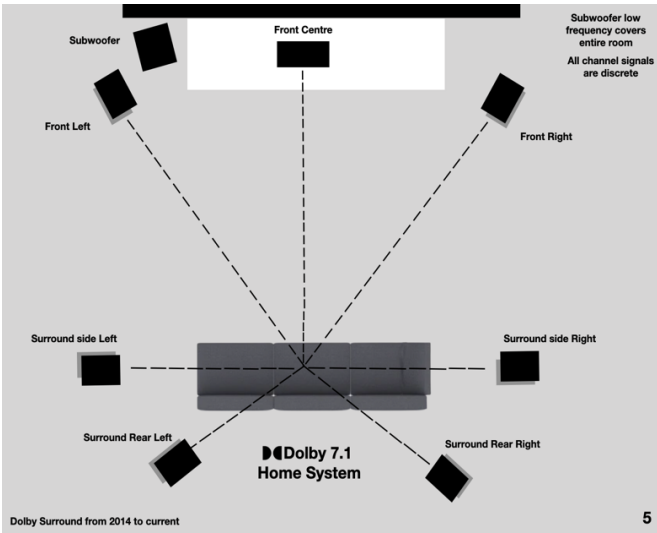




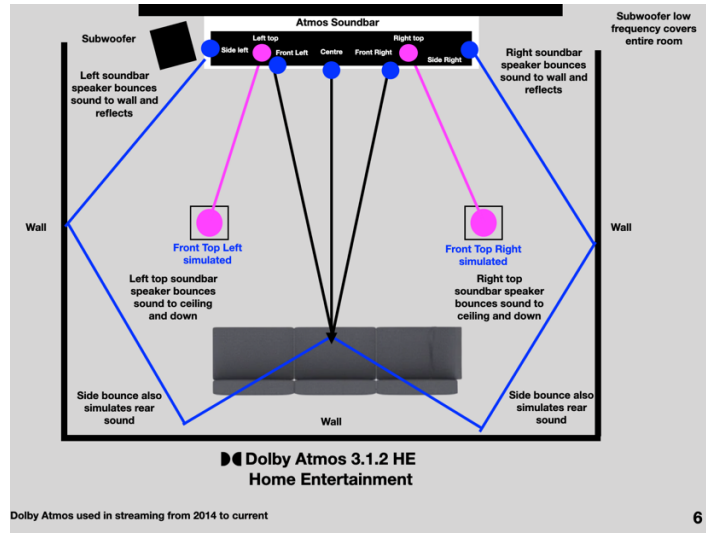
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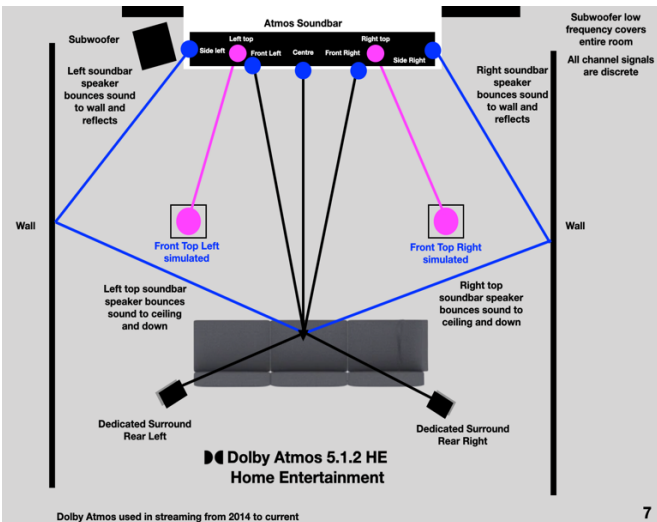
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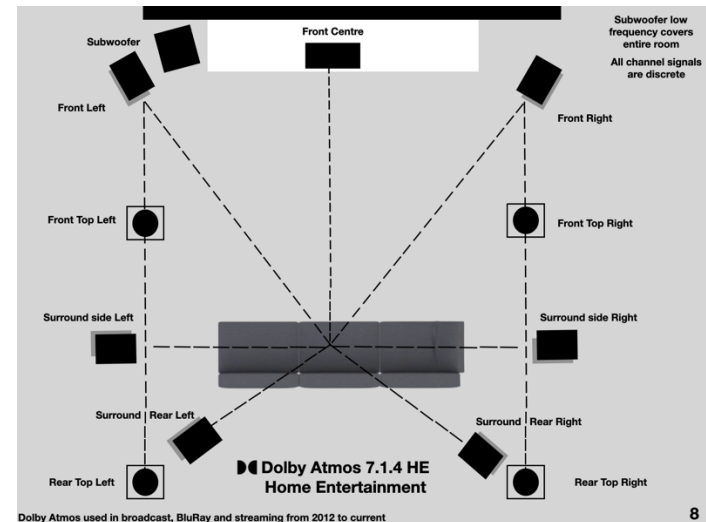
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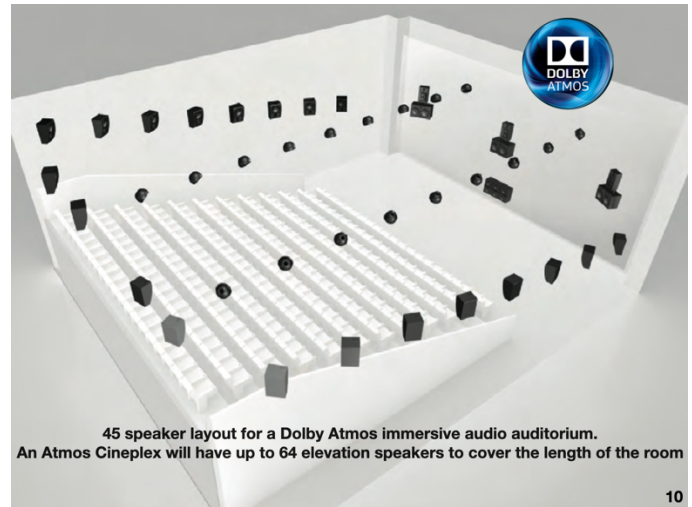
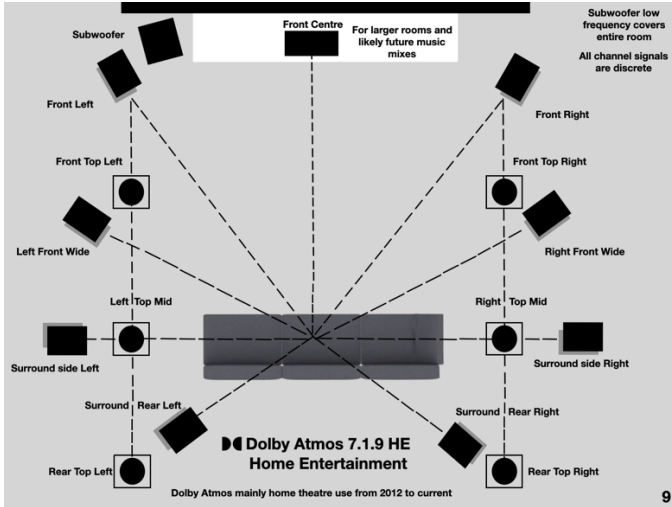
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Thank you very much for reading our Why Dolby Atmos document we hope it is has helped to demystify what Dolby Atmos is understanding it and what it means to the future of music and post production. Dolby Atmos is not a passing fad it is here to stay it and Dolby Vision (more news on that soon) will be the future of all media and entertainment productions moving forward.

Bryon

contact@annexpro.com