

DVD Video Q & A

What does DVD stand for?

The term DVD can stand for either Digital Versatile Disc or Digital Video Disc. Either definition is accepted, though Digital Versatile Disc is more widely used.

What kinds of DVD formats are there?

The most widely known format currently is DVD-Video, which we know of as DVD movies that we can purchase at the local store. Other formats include DVD-A, DVD-ROM, DVD-R, DVD-RW, DVD+RW, and DVD-RAM. Each has its own use and special purpose.

DVD-A: This stands for DVD-Audio, which is a new audio format just starting to hit the market. It allows for better-than-CD quality and multiple channel surround sound.

DVD-ROM: ROM stands for Read Only Memory. This is typically used for data storage and software titles. Video games are starting to come out on this format with more to follow.

DVD-R: This stands for DVD-Recordable. This is used with DVD recorders like the Pioneer A03 drive. This is a "once-recording" format, which means you cannot erase the information that has been previously written and write new information.

DVD-RW: The RW stands for Re-Writeable. Unlike DVD-R, this format allows you to erase info on the disc and write new info in its place.

DVD+RW: The only difference between this format and DVD-RW is the "+RW" format is accepted in most DVD video players and DVD-ROM drives.

DVD-RAM: RAM stands for Random Access Memory. These discs work similarly to 3.5 floppy disks. You are able to transfer files on and off the disc at will. Though great for data, these discs are not great for video because they do not play on standard video decks.

What is MPEG-2?

MPEG stands for Motion Picture Experts Group. The "2" signifies that it is layer 2, or the second compression level in the MPEG standard. When discussing MPEG, you are discussing the compression of the video that will be on the DVD. MPEG-1 is a higher compression standard that gives you lower quality video. MPEG-2 is optimized to compress the video so the quality is preserved and you are able to place numerous amounts of information on the DVD. MPEG-2 is the standard compression for DVD-Video.

What is Encoding/Transcoding?

Encoding is the process of taking an uncompressed video file and compressing it to fit the MPEG-2 standard. With encoding, you send a video signal from its source (a VCR, Beta Cam deck, etc.) into a hardware device that will do the encoding for you. Usually, you would see this in the form of an encoder card that would be placed into your computer. The compressed file is then stored on the hard drive. Transcoding is the same as encoding except with transcoding, your source is already a digital file that lives on your computer. You would use this when you are editing AVI files in some type of video editing software. Once the AVI files are all edited, you send these files through the encoder card, compress them, and then store them back on the hard drive, this time as an MPEG-2 file.

What is Authoring?

Authoring is the last step you take before creating your finished DVD. Authoring allows you to make your DVD interactive and non-linear. That means you are not limited to watching a movie straight through without skipping around. In the linear world, everything has a beginning and an end. These are constants and you must go through one to get to the other. Example: a VHS tape. With a DVD, you are able to move around the disc at will, jumping between scenes in a movie, or viewing special features like interviews, deleted scenes, etc. Putting all of these features together in an interactive format is Authoring. If you like, think about it as a book, where the story is written first and

then the table of contents are written and placed at the beginning. Authoring is creating the table of contents for a DVD.

What kind of DVD disc sizes is available?

Currently, there are five different sizes for DVD discs. DVD-5 is a single layered, single sided disc. DVD-9 is a dual layered, single sided disc. DVD-10 is single layered, dual sided disc. DVD-14 has a single layer on one side and a dual layer in the other side. DVD-18 is a dual layered, dual sided disc. Each layer will fit 4.7GB of information.

Who makes DVD-R discs?

Currently, there are three companies that are manufacturing and distributing DVD-R media. Pioneer, Taiyo Yuden, and Verbatim are the main three, with more on the way.

What is the difference between General Purpose and Authoring media?

When DVD-R first hit the market, the first drive to be sold to the public was the S101 DVD-R Recorder from Pioneer. After a while, Pioneer released a new drive to take DVD recording to the next level. Thus, the DVD-R S201 was born. This is the drive that made recording DVD's popular to the professional industry. The name given to the unit was the Authoring drive. Just recently, Pioneer released a new DVD recorder, the A03. They decided to name this unit the General Purpose drive.

The main difference between the two is the laser. In the Authoring drive, a 635nm laser is used, while the General Purpose drive uses a 650nm laser. Also, master DVD discs created on the Authoring drive are capable of being replicated directly from the disc at a replication house. A master disc created with the A03 drive will need to be transferred from the General Purpose DVD to DLT tape before it can be replicated. Remember, replication is the process of stamping out discs from a glass master and can only be done at a replication facility. Duplication is the process of burning multiple discs in a DVD recorder. Both types of discs can be duplicated, providing there is no copy protection written to them.

Besides the laser and the replication issues, there is no real difference between the two types. Both can be used to create a master disc that can be played on most conventional players. Though it is called the Authoring drive, it has nothing to do with the act of authoring, as described above. You are able to author your DVD on either type of media.

Why can't I copy my DVD disc?

Chances are that if you cannot copy the DVD disc you own, it is because it has been encrypted. Just about every title that you can purchase in a store has some kind of copy protection. With the DVD titles coming out today, there are two main types of encryption that is written to the disc. The first is called CSS Encryption. CSS makes it so the disc cannot be copied or duplicated by using a burner. In this case, if you own a DVD duplicator for distribution purposes, you will not be able to make copies of a DVD title that you bought at a store. The same is true if you try to copy the disc using a computer. The second type of encryption commonly used is called Macrovision. This form of protection prevents anyone from copying the DVD by transferring the video signal to another device via an analog connection. The best example of this would be hooking up your DVD deck to a VCR and copying the disc onto a VHS tape. With Macrovision, the signal is interrupted every few seconds. So you never get a clear picture since it is always cutting in and out. These encryption formats are the most commonly used formats in the industry today.

What is a Video CD?

A Video CD, or VCD, is similar to a DVD in that it will play movie files on your computer and on some, not all, DVD players. The main factor to look at is VCDs do not use MPEG-2 compression for their video files. Instead, they use MPEG-1, which because of the high compression rate, the end result loses much of its quality. The high compression allows for a full-length movie to fit onto one CD.

Will CD-R discs work in a DVD player?

Yes and no. There are some players that will play CD-R discs, whether the content is music or a movie file like a VCD. However, there are still players on the market that will not recognize the CD-R format and will act as if there is no disc in the drive. The best way to test this out is to go to your local electronics store and test your CD-R discs on the DVD players they have in stock. Many of the newer models come equipped to play CD-R discs, but test it out before you buy.

Can I put my VHS tapes onto CD?

Yes, but you will need to purchase some additional equipment. There are many video capture devices being sold in all price ranges. I would select one of these, preferably with accompanying software. Many of these packages come with software or hardware that will compress the video signal for you. In most cases, it will be compressed into MPEG-1. This will allow you to bring the video into your computer, edit where you need to, and burn to a CD-R that will play on your computer and some DVD players. There are also packages that allow you to do the same thing, but for DVD-R discs. These cost a little more, but with them, you can create your own DVD's that include authoring, Dolby Digital sound, and all the features that make DVD what it is. The starting range for these types of packages is usually around \$800.

What is DVD-Audio?

DVD-Audio, or DVD-A, is the newest audio product to hit the market. It is the next step in the evolution of the digital audio market. Currently, CDs have 16 bit, 44.1 kHz audio in a stereo, 2-channel format. With DVD-A, the bit rate is increased to 24 bit, the frequency is increased to 48 kHz or even all the way up to 96 kHz, and the 2-channel, stereo format remains with 5.1 surround audio accompanying it as well. Basically, the clarity and the quality of the audio have been expanded. Also on the horizon is the use of video images to play along with the audio. When DVD-A players become more prevalent in the market, more DVD-A discs with special features will appear as well. When you look at the DVD-Video market, the first discs contained just the movie and that's about it. As time went on, the features expanded to include many different things on one DVD disc. The same will occur for DVD-A.

What is Dolby Digital / DTS?

Dolby Digital and DTS are both coding systems for audio. Dolby Digital is the international standard for audio coding. With Dolby Digital, you are able to fit quality audio on the DVD and still have room for the video file. Without compressing the audio, you would not be able to fit a 2-hour movie onto one DVD. DTS stands for Digital Theater Sound. It was developed for theaters and is now the competitor of Dolby Digital. Most DVD's come with the option to use either.

What is 5.1, 6.1, 7.1 audio?

The numbers signify how many audio channels are present. With stereo, you have 2 channels, a left and a right. The idea behind stereo was to give you the feeling that you are in the same room as the music and you can sense the flow from one side of the room to the other. Multi-channel sound takes that idea to the next level. 5.1 means there are 5 channels (left, center, right, rear left, rear right) and the .1 signifies there is a subwoofer for your extra low sounds. For 6.1, you just add a center channel in the rear. Once you get to 7.1, you are presented with a left, left center, center, right center, right, rear left, and rear right channel scheme, plus the subwoofer.

How much information can you fit onto a DVD?

This question is not as simple as it would seem to be. With a CD, you have 650 MB or 700 MB and that would fit 74 minutes and 80 minutes respectively. With a DVD, you are dealing with 4.7 GB of information, or roughly 7 CDs worth of space. The major difference comes in when discussing how much video or audio can you put onto a disc. With DVD, you can no longer measure the video and audio in terms of length as you could in the CD world. With DVD, you are compressing the video and audio before it goes onto the disc. The more or less you compress, the more or less available space you have on the disc. For video files, assuming you are encoding into MPEG-2 format, a good rule of thumb is a 2-hour movie will fit onto a 4.7 GB disc. For audio files, it will vary depending on how many channels you are encoding. If you are only using stereo two-track, you can fit about 6 hours worth of audio onto a 4.7 GB disc. If your audio is in 5.1 surround sound, you can fit about 2 hours of audio onto a disc.