

DVD: The Next Step in Computer Hardware

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Ten years ago the only people who really used the World Wide Web were scientists and government officials. Internet service providers like FlashNet and Earthlink hadn't even come into existence. Laser printers and cable modems were merely designs on a drawing board. Compact discs to play music, and a 3 1/2 inch floppy disk that could store more than a megabyte of information were the latest crazes.

Now think of all the advances that have occurred in the last decade. Personal computers process information at speeds that were unthinkable in 1988. Color printers reproduce images at photo-like quality. New forms of communication make it possible to conduct phone calls over the Internet without having to pay long-distance charges. And the use of the World Wide Web as a source of information and entertainment has exploded, with as many as 47 million people using the Web in the United States alone.¹

Like every other facet of the computer world, data storage has made dramatic advances in the past 10 years. Hard drives now store information measured in gigabytes, or billions of bytes of data. Zip drives, tape backups and recordable CD-ROM drives can store hundreds of additional megabytes of critical files. Some companies have now begun providing off-site data storage, an option which lets you upload important information and store it on a different computer for a small monthly fee.

Now comes a new technology which appears ready to overtake them all: the digital video disc (DVD). It is a new standard of data storage in which a single two-sided disc can hold as much as 17 gigabytes of data. DVD eliminates the annoying need to swap several discs in one drive, and can deliver motion picture-quality video and surround sound to your PC.

By year's end, DVD drives and software will probably become as prevalent in many electronics stores as CD-ROM software is today. To help prepare for the onslaught soon to come your way, we've decided to give a detailed review of what a DVD drive can provide. First, though, a little background information on the brief history of the DVD.

The Story of DVDs

Digital video discs have been in production since the last quarter of 1996 when they were introduced in some of the latest models of Toshiba's line of desktop computers. Companies like Compaq and NEC soon followed suit. By the end of 1997, every major manufacturer of personal computers offered some form of DVD drive with their systems. Early forms of DVD drives (DVD-1) experienced a number of unforeseen drawbacks. Early DVD drives were unable to read CD-recordable or CD-rewriteable media, and other forms of storage which are now becoming increasingly popular. The quality of video playback was not as enhanced as some users would have liked, and the overall speed and performance of the early DVD drives were not up to expectations.

The latest wave of DVD drives and upgrade kits feature second-generation technology (DVD-2), which solves the early compatibility problems. The new drives have improved video quality, and the performance levels are a vast improvement from earlier models. The new drives also allow you to play DVD movies on the television set. TV-based DVD players cannot read DVD-ROM software, so

buying a PC-based DVD drive increases the options you have for using certain types of media.

What Will a DVD Do for Me?

Digital video discs are much more than a souped-up compact disc. With their capacity to store incredible amounts of data, DVDs will have an enormous impact on the way future computer programs are written. Today's DVD media has nearly eight times the storage capacity of the compact disc, 4.7 gigabytes of information on one side, versus 650 megabytes of data on the compact disc. Future forms of DVDs will be able to hold as much as 17 gigabytes on one disc, or more than 27 times the amount that today's compact discs can hold.

But there's more. Digital video disc systems have introduced a new type of video playback (MPEG-2) which displays information at a resolution more than four times current MPEG standards. The results are astounding. Compared to current MPEG videos, the new MPEG-2 playback displays images at a quality that surpasses current laser disc movies.

DVD upgrade kits also improve a personal computer's handling of audio, using a new type of sound output called Dolby AC-3. With the right set of speakers connected to your system, your personal computer could become a miniature home theater, giving you the full surround-sound effects and enhanced video display experienced in movie theaters.

Making the Upgrade

Because the installation of a DVD drive involves so many of your computer's systems, it should not be attempted by someone who's unfamiliar with the inner workings of a PC. Even if you're an expert at taking PCs apart, expect to spend at least an hour or two removing the old hardware and installing the new components.

DVD kits consist of much more than just a drive and a few small cables. There's the drive itself; a decoder add-in card that works with your system's existing graphics and sound cards; installation software; and associated cables that need to be connected and rerouted to and from your sound card, video card and monitor. Sound confusing? It is. Fortunately, the documentation that accompanies the latest DVD kits is very clear and concise, so experienced users shouldn't have too much trouble following the installation procedures.

Before you run out and start installing a new drive onto your old PC, however, make sure that your graphics boards work with the new hardware. The reason for this depends on the decoder card that is included with the DVD kit. This card enables your computer to play MPEG-2 videos in DVD movies and programs. The decoder card takes the MPEG-2 video and turns it into high-resolution images and movies. The card then either sends this video data directly to your PC's graphics card for display (a process known as video inlay) or adds it to the graphics signal after it has left the graphics card (a process known as video overlay).

If your DVD drive uses the video overlay method, chances are you won't have any compatibility issues with your existing graphics card. DVD drives that use the video inlay method, however, require that a graphics card support a process called linear memory addressing. Unfortunately, many older graphics cards do not support this new technology, meaning that if you install a new DVD drive, you may end up having to purchase a new graphics card.

Noticeable Differences

So what does a user get for the extra money and hours of disconnecting and reconnecting new hardware? In a word, plenty. There is simply no comparison to the type of audiovisual effects a DVD system can produce versus a computer that's equipped with only a CD-ROM drive. The 3-D sound effects and video streams, as mentioned before, are on a par with the kind you'd expect to

see and hear in a regular movie theater. When connected to a large-screen television, DVD drives can provide users with high-resolution motion pictures far above what VHS recorders (and even laser disc players) have to offer.

Even if computer users run CD-ROM software on a DVD drive, they will still be aware of some advantages. Second-generation DVD drives spin faster than older models. On average, the spin rate for a DVD drive is equal to the spin rate for a 20X CD-ROM drive. This translates into faster installation and transfer times when installing a program onto your PC or moving a file from a disk onto the hard drive. As DVD drives continue to improve, these transfer and installation times will continue to increase.

Software on the Horizon

There aren't many DVD software titles on the market, although manufacturers estimate that there could be as many as 100 or more products available by year's end. According to Richard Doherty, the director of the industry analyst firm Envisioneering, "I know of eight or nine dozen titles in the works. The number of PC DVD titles should be 10 times larger than the total consumer player (movie) discs by the turn of the century."²

One of the first companies to take full advantage of what DVD has to offer is DK Multimedia, which is known for its award-winning line of reference software. This fall, the company plans to release Eyewitness World Atlas, an interactive map of the world that's been enhanced to exploit the new DVD technology.

"We have a terrain database of the entire earth's surface -- everything -- at 1-kilometer intervals," said Chuck Willis, a manager for DK. "This atlas will allow users to do a fly-through of the entire earth's surface. There will be MPEG-2 video on it, plus a ton of reference information. You just can't do this kind of thing with this level of detail on CD-ROM."²

Other software makers have started jumping on the DVD bandwagon. Microsoft has already released a DVD version of its popular Encarta series, complete with an expanded encyclopedia, world atlas and interactive profiles of historical figures. The publishers of the Encyclopedia Britannica are considering a DVD version of their own for 1999. As more users buy systems with DVD drives already installed or upgrade their existing computers, the number of manufacturers creating DVD software should grow steadily.

To DVD or Not to DVD?

Whenever a new type of computer technology emerges on the scene, there's always a bit of reservation about purchasing that technology. That's the same question many computer users are going to face when deciding to purchase a DVD drive. Do I want to spend \$300 or more to upgrade my system? Will I have to buy a new computer for DVD software? Is it really going to make that big a difference?

In response to those questions, it all depends on what you do with your computer. If your PC is used mainly for word processing, conducting research and occasionally surfing the Internet, a DVD drive may not be for you. And if you already own a home entertainment system, it would probably make sense to just go out and buy a DVD player for your television instead.

However, if you've got the extra money and want to be able to use the latest games and reference software a few years from now, you should consider having a DVD drive installed on your computer. If you're new to the computing world and are buying a system for the first time, it'd would make sense to buy a computer with a DVD drive already installed. These drives set a new standard in PC-based entertainment, and the software that will be available for them in the coming

months is on a level that older programs simply can't compete with. With so much going for it, buying a DVD drive now could be a wise investment that will keep your computer well-equipped and functional into the next century.

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