

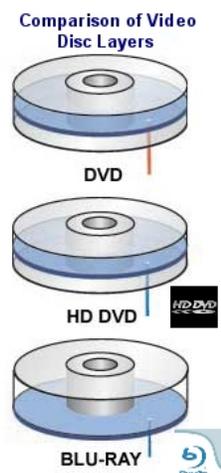
# INSIDE DVD: Blu-ray & HD

by Ken Pett and John Miller  
Images by D. Massarik

You have to wonder if isn't faint echoes of Beta versus VHS. The DVD format that long ago defeated VHS and became entrenched in millions of American homes is caught up in the middle of a technology fight that could make current DVD players and recorders as useful as that old eight-track tape that still sits in the corner of your basement.

Nine years after the introduction of DVD, we're about to get the first taste of DVD's higher-quality successors: HD DVD and Blu-ray Disc. The specifications of both formats promise amazing leaps in quality. Both can deliver an unmatched home theater experience — one that combines high-definition video with high-resolution 7.1-channel audio formats developed especially for these new formats. Both include advanced interactive features that the extras packaged with current DVD look like kid's stuff. Both formats are extremely strong from a technology standpoint, but how will that play out in the consumer market? Many buyers are likely to get lost in the advertising propaganda that manufacturers and more importantly, movie distributors get behind. A DVD player may just be a DVD player, but how many movie titles become available for each over the next few years can decide a format's fate.

There are, naturally, wild cards. Microsoft Corp, for one, is an exclusive backer of HD DVD and has made its Windows Vista operating system and its stand alone XBOX 360 game system HD-DVD compatible. This unquestionably influences the computer/peripheral and game manufacturers, who may have to pay royalties to incorporate third-party software support for Blu-ray discs. Already, HP, which had previously backed Blu-ray, is attempting to support both formats. Toshiba has previously announced that its first HD-DVD players will handle the full suite of iHD interactivity even if it means distributing firmware upgrade after the players are on the market. Another twist is the retail chain. Target stores, announced in mid-2007 that it would exclusively sell Blu-ray format players. Not mentioned in its press release was that Target presently carries movie titles and game software in both Blu-ray and HD-DVD formats.



## FORMATS

The new high-def discs are significantly different creatures from standard DVD. Most important, they won't work in a standard DVD player although both HD DVD and Blu-ray players promise backward compatibility to handle regular DVDs. Both types of disc look identical to each other AND identical to the standard DVD. An HD DVD even has the same physical construction as a DVD, with two 0.6-mm substrate layers (only the top one contains data) bonded to make a single disc. Blu-ray discs, in contrast, have a single substrate with the data layer residing close to the bottom surface. The initial Blu-ray design called for a protective caddy — much like original computer CD discs required, but the Blu-ray community quickly realized the weakness in the concept and scrapped the idea in favor of a scratchproof coating. Beyond mere specs, another business case for the introduction of high-resolution discs is the market that was created by the introduction

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of flashy new flat panel HDTVs. According to the Consumer Electronics Association, U.S. sales of digital TVs and related products in 2006 increased 60% over 2005 and are expected to easily surpass that for 2007. The images in the HD DVD or Blu-ray high-def versions of movies can have more than 2 million pixels — a fivefold increase in resolution on an HDTV over a standard set. Whatsmore, while both Blu-ray and HD DVD players will put out signals in the standard Dolby Digital and DTS formats, they will also offer Dolby Digital Plus --- an enhanced version of Dolby Digital, able to deliver up to 7.1 discrete audio channels as well as higher audio data rates (3 Mbps on HD DVD and up to 4.7 Mbps on Blu-ray).

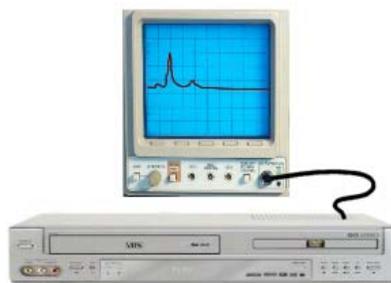
### The CATCH

Both HD DVD and Blu-ray players are pledged to be backward-compatible with current TVs and audio gear, but there are a few caveats.

To get the most from your new high resolution DVD player you need to know the numbers...numbers that may cause issue if you already bought an HDTV. Most current HDTVs — including the new breed of 1080p projection and flat-panel sets — can't accept 1080p-resolution video via an HDMI connection. That means most people will have to rely on the deinterlacers in their TVs to restore the super-high-resolution images on many of the discs to their original progressive format. This isn't an immediate problem with HD DVD, since early models can only deliver 1080i and 720p format signals. But it is somewhat of a limitation for Blu-ray, since most of its titles will be mastered in 1080p, and virtually all of the players are capable of native 1080p output. Fortunately, Blu-ray players also provide a 1080i output for compatibility with almost all current HDTVs.

Another issue involves the audio (HDMI) on most first-gen HD DVD and Blu-ray players. To fully experience Dolby True HD and DTS HD Master Audio, you need HDMI version 1.3 — but that specification hadn't been completed as of early 2006. So, even though these formats were designed specifically for Blu-ray and HD DVD, the HDMI jacks on early players can't pass their signals on without some form of degradation (downsampling or transcoding).

Is another format war inevitable? At the 2007 Consumer Electronics show, HD-DVD and Blu-ray squared off on opposite side of the room and brought out all the marketing artillery they had to convince the industry that they were the clear and only choice... in spite of that fact that only a handful of manufactures were just starting production of relatively expensive players and the total number high resolution movie titles available while growing by leaps is still less than 1000. But (of course) there are huge sums of money at stake, which always attracts the huge corporate interests including videogame, computer hardware and software companies, consumer-electronics manufacturers and movie studios and distributors. And the bottom line, cost goes a long way towards influencing consumer decision ---a recent sampling of high def DVD players indicated that Blu-ray players still command a \$150 to \$200 premium over their HD-DVD equivalents. The biggest proponent of Blu-ray (Sony) has vast experience in loosing an entire market, and isn't likely to repeat it's mistakes. Perhaps the only hope is that instead of a prolonged VHS-Beta type war, a solution along the lines of computer technology DVD reader and recorder manufacturers will triumph. Instead of having to choose between DVD+r and DVD-R, manufactures managed to produce players and recorders that supported BOTH formats. And a drawn out battle between HD-DVD and Blu-ray discs may force some unwanted results--- while consumers sit on the sidelines waiting for resolution, both the HD and Blu-ray camps loose significant market in favor of digital video downloaders (legal and otherwise), the Video-On-Demand providers, and the slow but coming shift to magnetic flash and hard-drive media (PVR or 'Tivo' devices) which have the capabilities of storing hundreds or even thousands of digital HD video and audio files.



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