

The HighDef Wars Have Begun: HD DVD vs. Blu-ray

*A look at the Next Generation of Optical Burning.
A report from BurnWorld.com*



DVD was introduced back in 1997 when it acquired the status of advanced home video technology. Prior to the introduction of DVD, VHS tapes had been ruling the video market. Every household had to rely on the quality that VHS tapes offered. Looking at the video quality of DVD, the general consensus is that VHS did not quite measure up to its viewing quality. DVD came on like a storm to capture the home video market on the sheer force of its picture clarity and depth. Even though [DVD technology](#) is not more than a decade old, Hollywood studios are already toying with the idea of using a newer version of the DVD, known as HD-DVD . Closely related to this format is Blu-ray. Both new-age technologies are considered archrivals because they were introduced around the same time, and are attempting to dislodge the existing DVD format.

You can associate certain advantages and disadvantages with a new technology when it enters the market to dislodge an existing one. The existing technology has been accepted for both what it offers and what

it does not. The new technology, to make its mark, will have to focus on the missing features of the technology it is trying to replace. Both HD-DVD and Blu-ray are bringing into focus their improved visual standards.

- ❖ **Blu-ray** is the format developed by the Japanese electronic giant Sony
- ❖ **HD-DVD** is the format developed by Toshiba

Red against the Blu

- Optical disc technologies prevalent today use a red laser to perform read and write operations
- Blu-ray uses a blue-violet laser to read and write

You need to carefully evaluate the pros and cons of both so that you do not regret your decision later. Both the electronic giants responsible for introducing these formats, Sony for Blu-ray and Toshiba for HD-DVD, have not been able to agree on a common format or unification of standards that could be used universally. It seems as if history is about to repeat itself. Back in the late 1970s the rivalry between Beta and VHS formats had an adverse effect on the growth of the home-viewing segment of the video market.

It is feared that the non-standardization or lack of compatibility in both Blu-ray and HD-DVD formats are going to divide the viewing section as in the Beta/VHS days. The implications are clear; if a studio comes out with a movie using a particular format (let's assume only in HD-DVD format) viewers with Blu-ray players will not be able to view it, and vice versa. It places an added burden on production houses to release movies in both formats. However, consumers will have to be more alert while buying a movie disc to make sure that it is of the same format as their player. It is even more surprising that both the formats are more similar than different,

making it all the more difficult to make a viable choice between the two. The video comprises high-definition resolution, which is missing in the existing [DVD format](#). A careful examination and comparison between both HD-DVD and Blu-ray formats is in order to help the consumer make an informed choice.

The comparison

- The maximum resolutions supported via HDMI are 720p and 1080i HDTV in [HD-DVD](#) format
- Blu-ray has a resolution of 720p, 1080i, and 1080p in HDTV.
- Both are superior to EDTV 480p offered by the traditional DVD format.
- Both the new [HighDef technologies](#) have equivalent maximum image-constrained native resolutions supported via component video, which is EDTV+ 960x540.

The users of Blu-ray have more advantage with regard to the disk capacity:

	HD-DVD	Blu-ray
Single Layer	15GB	25GB
Dual Layer	30GB	50GB
Prototype	45GB (triple layer)	100GB (quad layer)

There is not much difference in the video capacity per dual layer disc of both the formats.

- An HD-DVD has an SD of approximately of 24 hours and an HD of approximately 8 hours. The SD of Blu-ray is one hour less and the HD is one hour more than its competitor.
- It is well known that the conventional DVD system uses the Dolby digital EX, DTS-ES soundtrack. Both Blu-ray and HD-DVD favor Dolby True HD, DTS-HD, Dolby Digital Plus, Dolby Digital and DTS-ES formats.
- Blu-ray gains a bit of an advantage when it comes to manufacturer support, whether it's home theatre or PC storage. This can again be depicted as follows:

	HD-DVD	Blu-ray
HOME THEATRE	LG, Toshiba, Thomson/ RCA	Hitachi, LG, Mitsubishi, Panasonic, Philips, Sharp, Sony, Samsung, Thomson/ RCA
PC STORAGE	HP, Intel, Microsoft, NEC, Toshiba	Apple, Benq, Dell, HP, LG, Panasonic, Philips, Pioneer, Samsung, Sony, TDK
STUDIO-SUPPORT	Canal, Paramount, Studio, Universal, Warner, Weinstein Co.	Disney, Fox, Paramount, SONY pictures (Tristar, Columbia and MGM)

		Warner and Lions Gate
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Technology and Manufacturing Process of Both Formats

It is essential to describe the exact pattern and style of both formats. **Blu-ray** discs have a tighter track pitch that has the ability to hold more pits than an HD-DVD of equivalent size with a laser of the same wavelength. The tighter track pitch is the result of a single thread of spiral data that continues from the disc all the way out towards the groove. It should be noted that both the formats are using the same type of lasers. The difference lies in the fact that the Blu-ray has different pick up apertures due to a different track pitch. In measurement, the track pitch is equal to 0.65 for HD-DVD and 0.85 for Blu-ray.

This makes both the pickups technically insufficient to become compatible. When you come to the surface layer, the HD-DVD is made up of clear plastic on the data surface. This causes unwanted fingerprints and scratches on the disc. HD-DVD has a thicker surface layer as compared to Blu-ray discs and the difference in thickness measures to 0.5 mm. It also cannot be denied that a smaller aperture is better as it enables the laser to get in focus with the aperture.

Why Blu-ray is more costly?

People who are not equipped with the technical aspects of both the formats are confused why Blu-ray format is the more expensive choice of the two formats.

- Blu-ray has a thinner surface layer. Even though, there is an advantage in keeping the data layer closer to the surface, it builds up considerably towards the final cost.

- Blu-ray discs also need a special hard coating to protect the data which lies a mere 0.1 mm beneath. All these features contribute towards the final cost.

In layman's terms, Blu-ray is capable of storing more data, but proves to be more expensive when compared with its counterpart, HD-DVD.

Format War and the Kids

Children are interested in the compatibility of video game consoles.

- An HD-DVD player is compatible only with an [Xbox 360](#), but requires an external accessory. On the other hand, Blu-ray is compatible only with Play Station3.
- HD-DVD players are more economical starting from \$499, which is a lot cheaper than Blu-ray players, starting from a whopping \$999 or more.

With this new technology, the consumers will have to spend more than they are on current technology. The retail price of an existing DVD format movie is around \$7, while the retail price of an HD-DVD movie ranges from \$29 to \$40. The wholesale price of a movie on Blu-ray ranges from \$18 to \$24.

It should also be noted that set top recorders are not available in either of the new formats. However, both are backward compatible with the existing DVD videos. This means you can still enjoy your old format DVD movies on the new players. According to market experts, both of the formats have equal chance of becoming popular in the electronics consumer market.

Both of the technologies are equally good in terms of the managed copy option and eventual high-def at full resolution. The managed copy will make it possible for viewers to view the discs on a portable video device or on a home network. HD-DVD formats do not have any region-coded discs or players at present, but that could change in the near future. This feature is available in the existing Blu-ray

formats. Industry watchers feel that the nine-region system honored by DVD needs to be followed by the HD-DVD and Blu-ray format as well.

The movie studios have made it very clear that the video capacity is completely dependent on the type of encoding used. Higher compression leads to more video per gigabyte. The compression rate is higher in the latest MPEG-4 or VC-1 formats. Existing DVDs are encoded with the older MPEG-2 Codec.

Major studios like Sony, Columbia, and Fox are committed to not using any image-constraint flag in the initial stages. The latest movies will be displaying full resolution via component outputs. The existing audio-equipment and A/V receivers are not compatible with Dolby Digital Plus, Dolby TrueHD, and DTS-HD surround formats. To make this happen, both Sony and Toshiba will have to make certain changes to their respective players by incorporating built-in decoding and analog audio outputs.

There is also a possibility that the manufacturer and studio support will change with time. Neither of the companies has issued press statements regarding whether or not they are comfortable with that idea. It also needs to be clarified that the early generation Blu-ray and HD-DVD players do not have recording capabilities. You can only play the movie and enjoy it.

The ability to make Blu-ray movies or an HD-DVD movie viewable on a home PC or a portable video device is known as managed copy. This feature has not been practically implemented yet, but is on the planning charts of both the format manufacturers. It is also possible that advanced copy protection techniques such as Macrovision or other related analog outputs could be used by these formats.

Hardware Components of the HD-DVD Format In Depth

With its price set at \$800.00, the Toshiba HD-XAI is the first HD-DVD player that will be available to consumers. Another related version of this DVD player, the [Toshiba HD-A1](#), is available at a relatively economical price of \$500.00. It is also looks almost identical to the Toshiba HD-XAI model. Another company, RCA/Thompson, is expected to come out with a player identically priced, which will add some zing to the competition.

Experts have already stated that HD-DVD movies will be available in single layer, dual layer, and single sided hybrid discs with a 4.7 GB layer and 15GB HD layer. Discs with the 4.7GB layer can play on any DVD player. HD-DVD movies can also be enjoyed on twin-format discs that carry a standard dual layer 8.5 GB DVD on one side with a 30 GB dual-layer on the other. It cannot be denied that hybrid and dual format discs are expensive but they also offer backward compatibility. The consumer gains the privilege of watching a high-def movie on the HD-DVD player.

The gaming card: Xbox 360

Xbox 360 has a high-def output that is equivalent to 720p and approximately 1080i. The capacity of the internal drive can create a limitation on downloading clips. The Xbox 360, which is not currently capable of playing HD-DVD's, will be able to soon because Microsoft has plans of releasing an HD-DVD add-on drive that will enable HD-DVD movie playback. However, games available in DVD-ROM format will have no compatibility problems.

Positives and Negatives related to Xbox 360

On the positive side, the players and movies will be available in advance in comparison to Blu-ray. Xbox 360 units are less expensive than Blu-ray players. A substantial number of movies are planned to be released over the year that are to include DVD versions on the same disc.

The compatible HD-DVD add-on drive hasn't been released yet which means that HD-DVD discs cannot yet be played. The much hyped managed copy could cost more and the studios still prefer to put movies on the older format DVDs.

The hardware technology of Blu-ray in depth

Blu-ray will be introduced soon after the HD-DVD players hit the market. Samsung and Sony are ready with their respective models ([BD-P1000](#) and [Sony BDSP1](#)) due to be released soon thereafter. It is expected that the Blu-ray players will have a capacity of giving a 1080p video output which is something that is missing in HD-DVD players. Big movie names are lined up to be released in the Blu-ray technology format to the advantage of the viewers.

Catalog titles or movies that are already available in the regular DVD format are supposed to be \$17.95. The new titles will be approximately \$23.45 per title. The retail cost will definitely be higher since the retailers need to add their share of the profit.

The gaming card: Sony's Play Station 3

Sony declared the launch of Playstation 3 at the 2005 Electronic Entertainment Expo. The users will have the additional privilege of watching HD movies while continuing to play their games. Industry watchers believe that buying a Sony Play Station can save a person about \$500 when compared to a Blu-ray player. Since Sony set to make this particular player available by November, a substantial number of buyers are expected to postpone their purchases until then.

Positive and Negative Aspects

Besides Universal, all existing Hollywood studios have agreed to release movies on Blu-ray format. The output of a Blu-ray player is nearly 1080p. Blu-ray format has the capacity of holding more data

and video in comparison to other HD-DVD formats. The negative aspect is that Blu-ray is likely to cost more than its rival counterpart. Playstation 3 will be available 3-4 months down the line, not immediately. Industry watchers believe that both formats can be tried and tested in the market and the one that offers more should be chosen.

DVDs are the best standard formats available at present for the purpose of data storage. The inevitable format war between Blu-ray and HD-DVD will be won by the one with superior technology. Blu-ray disc has an optical disc format meant for viewing high-definition video with equally high-density data storage capabilities.

Sony is the main supporter of this technology that was initially developed by the Blu-ray disc association. An equally well-known giant corporation, Toshiba, backs up the competitor of Blu-ray discs proposing HD-DVD as the best-suited technology for the new age. According to the officials of Toshiba, HD-DVD is a lot better than Blu-ray.

It also needs to be noted that at present, HD-DVD format is considered as the next generation technology as declared by the DVD forum. 230 different companies who have a track record of making it big in the computer market, music and movie industries set up the DVD forum. The Toshiba group maintains this forum, but many of the members have also been reported as backing the equally good Blu-ray technology. The final verdict is still not clear and only time will tell who wins over the consumer, who is the final judge in any clash of the corporate titans.

There have been several rounds of discussion between the owners of both Blu-ray and HD-DVD technologies to work out a middle ground. People are eager to know the winner in this clash of titans. But the recent talks do not suggest that there would be any possibility of a compromise.

Market Launch of the Formats

Consumers are eager to know when the new formats will hit the market. It has been stated by the officials that HD-DVD format will be available very soon but Blu-ray will take some more time. Both are backward compatible making it easier for the consumers to make a choice. It all depends on how much you are ready to spend. If you can afford to spend, then go for Blu-ray, otherwise there is always the option of the advanced HD-DVD discs. The reason why HD-DVD is out sooner in the market is that it can be manufactured with the existing equipment that is used to make current DVDs. Since the production can be continued in the same plants, it can be greatly altered.

The proposals of Blu-ray technologies state that within a short span of time the price difference between Blu-ray and HD-DVD formats will decrease to a large extent. They also state that a majority of people will prefer to have more disc space when they can afford it by spending a few more pennies.

The proposition of manufacturing a machine that would suit both the formats is ruled out for the time being since it would not be very affordable.

Both Giants have Ignored Customer Confusion

The existence of different technologies has led to confused customers who have become apprehensive about their opted technology becoming obsolete. Each format is portraying itself to be superior to the other. This can be seen in the marketing strategy of HD-DVD, “you want it, and we are here now”. The same can also be depicted in Blu-ray advertising which states that, “we won’t be first but we’ll be better”.

It becomes a drop-dead deal when the Blu-ray technology is given to the gaming companies because for them, 20 gigabytes of storage

capacity is the best thing that can happen. This can be a drawback for HD-DVD as the storage capacity is lesser in these discs. Some of the game manufacturing companies have even stated that the market would be happy if both the new formats are not launched to avoid any sort of price war and unwanted competition. It will add to the disappointment of the one whose format is not adopted in the market giving no return for all the hard work done.

Conclusion

However, it would be too early to state this as none of the gaming manufacturers have given their consent for any of the two formats. The proposal of HD-DVD states that it does not matter at all whether the consumers are getting 30 gigabytes or 50 gigabytes. What matters at the end of the day is, who is offering the latest technology at an affordable price.

They further claim that Blu-ray will definitely not be able to slash down the prices of their discs with the continuing production technology because the costs are too high for them. They will have to offer the disc at a much higher price to recover their production costs. So far so good, the best strategy will be to take a back seat, and wait and watch. The winner will come out sooner or later and you never know if both the technologies make an equally good impact in the market. The global market is after all, big enough to accommodate both of them.