
Sonic eDVD™

Where DVD Meets the Internet

A Sonic White Paper

SONIC™

eDVD™ - Where DVD Meets the Internet™

Why eDVD?

One of the most exciting and useful ways to expand the DVD format is to connect it to the Internet. There are several reasons why this is attractive:

- Up-to-date content - While DVD can deliver great-looking video, the content on the disc is fixed once it has been manufactured. By connecting DVD-based content with Internet-based content, time-sensitive, low-bit-rate, material can supplement the higher-bandwidth, on-disc content.
- Interactivity - While DVD is interactive, its range of interactivity is limited by its inability to save a user's progress over time or to provide detailed feedback. By connecting DVD content to the Internet, developers can track a user's progress through a DVD title and provide detailed reports to the user, the content developer and others. This could be used to design video-intensive course materials for educators or to create video-based interactive on-line games, for example.
- Direct ties to users - DVD content distributors have had no way to know who their users are. By connecting DVD content to the Internet, content owners can give users incentives to provide information that will help them offer new related products or services.

The synergy of high-quality video and audio combined with the immediacy of the Internet has the potential to enhance both DVD and Internet content while providing a compelling real-world example of what will be possible in the broadband Internet future.

The eDVD Format

The DVD-Video format doesn't take the Internet into account; nor do standard PC or set-top DVD-Video players. With eDVD, both the players and the content are enhanced to take advantage of Internet connectivity.

Internet-enabling DVD Players

The two types of eDVD players - PC-based and set-top based eDVD players - each take advantage of a set of JavaScript extensions to standard and embedded (for set-top) web browsers called ITX™. The ITX extensions, created by InterActual Incorporated and adopted by Hollywood studios and consumer electronics companies worldwide, define a standard language by which DVD players and browsers can communicate that has quickly become the industry standard.

On the desktop, dozens of different software and hardware-based DVD players from different manufacturers are installed on hundreds of millions PCs. To enable these standard players to be used as eDVD players, a special eDVD run-time engine is installed on the PC from the eDVD video title. This run-time engine acts as a universal interpreter between the DVD player engine and the Web, extending the functionality of the standard software DVD player. Presenting both the DVD-Video portion and the web content in the same

interface, the eDVD run-time player delivers the user a single, streamlined experience.

The eDVD run-time player is distributed with all eDVD titles, so no matter what type of DVD player you have on your PC, as long as there is an Internet connection, the eDVD title will play back.

On the set-top, player manufacturers are now implementing the ITX specification to ensure compatibility with eDVD titles. Look for web-connected DVD players in the fall of 2000 that include ITX, Interactual or eDVD logos.

eDVD-Enhanced Video Titles

DVD-Video titles can be created as eDVD titles at any point in the DVD-video authoring process. Ideally, content developers choose to enhance their standard DVD title with eDVD extensions and run-times, but eDVD content can also be added once a DVD-Video title is published.

Creating eDVD titles most often begins with a DVD authoring system such as Sonic DVD Creator, DVD Fusion or DVDit!. A sophisticated eDVD authoring system will allow you to create both simple, as well as highly-interactive, eDVD titles. Depending on the type and complexity of the eDVD title, authoring can be as easy as adding a URL to a DVD menu button, or as complex as designing a web page to interact with the DVD-Video embedded within it.

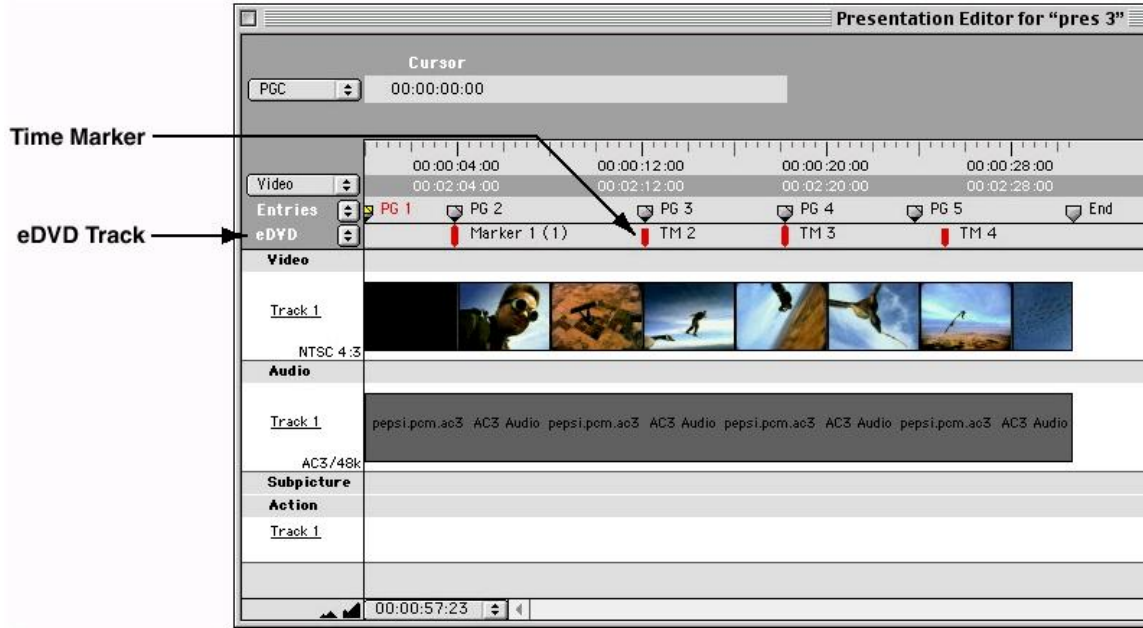
The production process for a simple eDVD title is straightforward and does not require any special knowledge of Java scripting or HTML programming. During the DVD-Video authoring process the author can create buttons that, when pressed, jump a user from the DVD-Video content to a web site. The author does this by creating a button inside the DVD-Video menu editor and typing in a URL (such as <http://www.sonic.com> for example). When the end-user clicks on this URL during playback on a PC, the corresponding web page will appear.

While the production process is simple for the author, the eDVD authoring application does a significant amount of work under the hood. Since not all DVD players report the playback location of a title in play, simple triggers – a title change or a chapter change, for example – can be used to launch URLs or other web events. In the case above, where a URL is linked to a menu button, the DVD-Video title will simply jump to a new title – e.g. Title #76. A corresponding Java script is generated that looks for a jump to Title #76 using the title jump as a trigger to alert the eDVD player that a special JavaScript event must take place. The eDVD player, looking at its Java script, will follow the instructions for that title jump and, in this case, open a web page and go to www.sonic.com. Both the DVD-Video-legal files and the JavaScript are automatically created when the eDVD title is formatted.

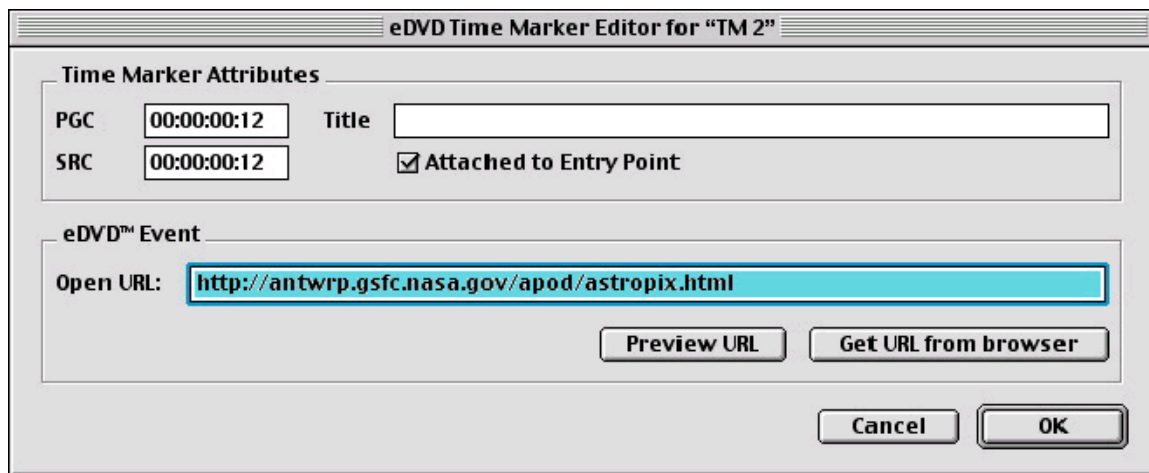
Since not all eDVD titles will be played in eDVD-enabled set-top players, Title #76 in the example above would include a still menu that would say something to the effect of "Place this title in your PC to access the Internet." When placed in a set-top player, the menu would be displayed for a few seconds and then return the user back to where they came from. On the eDVD player, the JavaScript event would prevent this still image from showing and instead jump right to the Web. The result is a 100% legal DVD-Video title that is enhanced when placed in a PC or eDVD-enabled set-top player.

Advanced eDVD Title Authoring

Moving beyond simple URL links, eDVD titles can become tightly integrated into the HTML environment. For example Sonic DVD Creator supports easy integration of URL links within the timeline of a video.



In this figure we show the timeline based editor within Sonic DVD Creator. Above the thumbnail images is a track labeled eDVD. Every red marker on this track is an eDVD **time marker**, which has been inserted by the DVD author. Each of these time markers can be assigned a separate URL, as shown in the next figure. As the video segment plays, a different web page will appear each time an eDVD time marker is encountered.



Once eDVD titles become web-driven, web-based authoring tools must be used to supplement the JavaScript and DVD-Video elements created in the DVD authoring system. For advanced eDVD titles, it is possible to program web-site development applications to allow the content author to place a DVD-Video window inside the web page and then create links that allow the DVD-Video to be controlled from any web button or event.

Examples of eDVD in use

A few examples of advanced eDVD titles include:

- Interactive sales and marketing – Imagine showing your latest product with full-motion video and having the browser display details on the product details, current pricing, and related products. Indeed, product promotion eDVD titles are an exploding market within the DVD industry.
- On-line training – With eDVD, a training video can have a direct link to the on-line trainer or on-line scoring system. As the video plays, the browser display can be updated with more details, a test or quiz, or a chat-window with the instructor.
- The ultimate magazine – Several new magazines have recently been introduced with a monthly DVD disc. For example, FILM-FEST (www.broadcastdvd.com) is a quarterly "DV ZINE" that includes links to related websites, sponsors, and other bonus material.
- Movies with up-to-date artist info and trailers – One issue faced by content distributors is ensuring that additional DVD content is time-relevant, such as upcoming movie trailers or up-to-date artist biographies. Authors can design their eDVD title to automatically access and display the most up-to-date information from the Web.

The Sonic eDVD Advantage

Sonic's eDVD has several key advantages that make it a superior choice for DVD title developers over other web connectivity strategies.

- Compatibility – Ensuring compatibility between eDVD content and standard DVD players is the single greatest concern for title developers. Sonic eDVD is an industry-proven solution that communicates directly with every PC-based DVD player on the market. This ensures that the best possible DVD player for the PC is used and also, that a non-DVD compliant software player does not have to be installed on the user's PC to ensure playback (this can often affect portions of the Windows operating system).
- Ease of authoring – eDVD titles can be as easy to make as typing a URL into a timeline in DVD Creator and DVD Fusion. All JavaScript run-time engine creation is done automatically with no user intervention.
- Industry acceptance – The InterActual technology used within eDVD has been used on virtually all-major motion picture titles that are web-connected.
- User Interface – No other technology delivers as seamless a user experience as Sonic eDVD. With a single DVD-Video and web browser interface, titles are richer and more engaging than other models that split DVD-Video and web browsing into separate overlapping windows.

About Sonic

Sonic is the world's leading developer of digital media authoring workstations, setting the standard for video and audio quality, productivity, and creativity. More DVDs are produced today using Sonic than on all competing systems combined. For over 15 years Sonic has lead the digital media industry and won numerous awards in the process.

For more information:

Phone: 415.893.8000

Fax: 415.893-8008

E-Mail: info@sonic.com

Web: www.sonic.com

Sonic, Sonic Solutions, the Sonic logo, sonic.com, AuthorScript, AutoCadence, AutoDVD, AutoSonic, cDVD, ConstantQ, DVD Creator, DVD Fusion, DVD Ready, DVDit!, dvdit.com, DVD Producer, DVD Studio, eDVD, First in DVD, hDVD, High-Density Audio, MyDVD, OneClick DVD, PrePlay, sDVD, SonicCare, SonicClarity, SonicStudio, SonicStudio HD, Streaming DVD, The Business of DVD, The Easiest Way to Publish on DVD, The Smartest Way to Publish on DVD, TimeTwist, Varispeed and Where DVD Meets the Internet are trademarks of Sonic Solutions.

NoNOISE is a registered trademark of Sonic Solutions.

Dolby Digital is a trademark of Dolby Laboratories, Inc.

IDX and PCFriendly are trademarks of InterActual Inc.

Dreamweaver is a trademark of Macromedia, Inc.