

Copy Protection: **Hot** Button Issue



Link Data Security is one of many companies taking copy protection global.

By Gia McKenzie

It's hard to believe that copy protection and copyrights for media content — including music, movies and videogames — and its physical (and digital) distribution has become the topic of water cooler conversations across the country. "Are you for or against Napster and MP3?" is as timely and compelling a debate as: "Are you for or against presidential candidates Gore or Bush?" One faction of media consumers are of the belief that there should be free reign for accessing and copying content at will; others maintain that these works warrant a price and should therefore be free from the threat of piracy.

But as Hans Pedersen, CEO of Link Data Security, a company in the business of copy protection opined: "Copy protection is no longer to be debated — it is here to stay." Those in favor of copy protection are winning *this* media race, with support found in innovative copy protection technologies springing up all over. However, most do agree that in the end most copy protection schemes will be hacked. "[But] somewhere, you've got to draw the line," said Verance (another copy protection enterprise) CEO, Robert

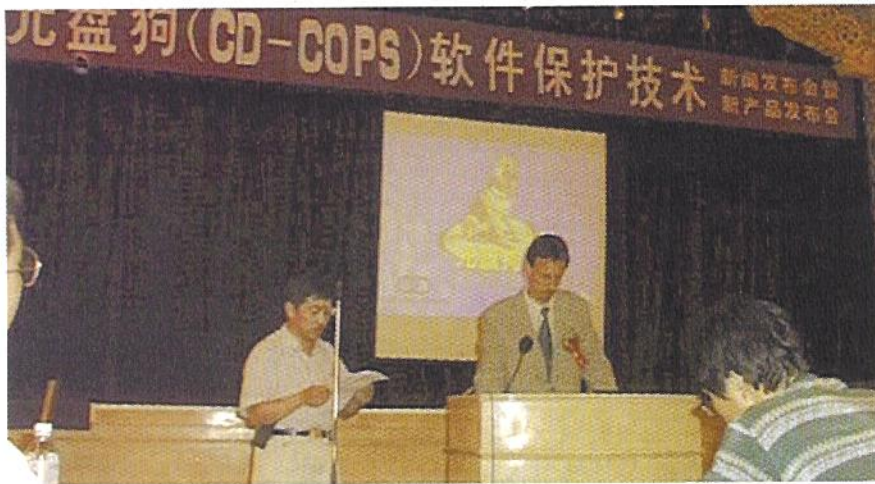
Warren. "Anyone in a position of responsibility in the commerce cycle [of content and the distribution of] wants to see a line in the sand drawn. I don't think allowing college students to have their way is the way to go."

Combine And Conquer

Piracy is a vast, fragmented problem for the media industry. Fortunately, those combating the lawlessness have organized and established specific guidelines and organizations that work to

implement copy protection schemes. The Secure Digital Music Initiative (SDMI), formed in 1998, is a forum that brings together more than 180 companies and organizations representing information technology, consumer electronics, security technology, the worldwide recording industry and Internet service providers. Member companies make chips, computers, peripherals, secure containers, watermarking technologies, portable flash memory devices, compression codes, and micropayment systems to jukebox vendors. At the core, SDMI's work is based on the principles that copyrights should be respected and that those who wish to do so should be able to use unprotected formats. This flexible approach will enable a new market that works for consumers, artists, manufacturers and content providers.

SDMI recently passed the first round of copy protection specifications for DVD-Audio. Technology developed by Verance was licensed to SDMI and implemented during PHASE 1 standards for DVD-Audio. "We went through a



DVD-Cops, developed by Link Data, is one the world's first DVD-ROM copy protection solutions.

watermarking bake off and survived and passed the test," said Warren. The main reason Verance was chosen as the copy protection provider was because its technology was inaudible — key when listening to DVD-Audio, Warren explained. "[Our technology] works by manipulating the wave form," said Warren. "You've got to be impervious to everything that happens to audio," he said. SDMI is now in PHASE II of its copy protection standards adoption for DVD-Audio, and again Verance is one of the companies being considered, along with CRL, Blue Spike and MarkAny. PHASE II will also address cross-platform issues between DVD-Audio and the Internet and generational copy control. PHASE II will determine whether audio has been compressed.

The 4C Entity, LLC, another such standards body, is the licensor of Content Protection for Recordable Media and Pre-Recorded Media (also known as CPRM and CPPM). The CPRM/PPM Specification defines a renewable cryptographic method for protecting entertainment content when recorded on physical media. The types of physical media supported include, but are not limited to, recordable DVD media and Flash memory. The CPRM and CPPM Specification was designed to meet the robustness and renewability requirements of content owners while balancing the implementation needs of both the consumer electronic and PC industries. To accomplish these require-

ments, the system defined by the specification relies on key management for interchangeable media, content encryption, and media-based encryption. The use of this specification and access to the intellectual property and cryptographic material required to implement it will be the subject of a license.

New Candidates

So while Verance climbs to (DVD) copy protection ubiquity, joining the likes of Macrovision and Sony DADC in other formats, there are newcomers in this industry looking to gain market share. To compete in this crowded arena, most in the industry agree that successful copy protection systems should include many of the following characteristics: flexibility and reliability; transparency to the end-user; fast service; fully-automated production process; fast provision of software upgrades and libraries through the Internet; thorough and extensive quality assurance; and development of new versions.

Hide & Seek Technologies (HST) recently announced that it will be releasing its unique copy-protection solutions in 1Q of 2002. HST's Karl Schneck said, "The basis of HST's technology revolves around the actual destruction of all or part of an optical disc. HST's original patent addresses the application of a polymer or other substance to the surface of the disc. The requirement for specific placement of the polymer on each disc precludes the duplication of

programs on recordable discs, due to the random vector placement of the data. Additionally, this placement requirement will require very specific equipment for both determining the polymer placement location as well as the actual application of the polymer. These requirements, coupled with the requirement for the specially designed polymer for that particular application, will provide additional, seemingly insurmountable, barriers to the professional pirate who provides product through the molding process."

HST has also looked to the near future, where the issue of broadband delivery could affect pirating software applications. "If you look at the availability of the broadband delivery systems, it should be about three years until it becomes a major problem for the majority of large software programs such as Microsoft Windows. About 90 percent of the households in the U.S. can still not get DSL lines, or worse, get qualified service and support, [and] when they do get them there are not enough trained support people. However, a download protocol which required a copy-protected disc to be resident in the receiving computer would be one way to address the problem as it occurs. We are currently in discussions with several companies to provide such protection," said Schneck.

MLS Laserlock International Inc. is one of the first companies to develop a complete software copy protection system for DVD-ROMs (and CD-ROMs). It is the first and only copy protection system that has been awarded the European IT Grand Prize. Laserlocks's technology is designed to prevent software piracy, provide ease of use, flexibility to developers and transparency to legitimate end-users. The use of a unique encryption code and physical signature for each application combined with the continuous development of new Laserlock versions, lead to the elimina-

tion of generic cracks. Two new products, Chronolock and Digilock, extend the range of services provided.

Korean-based SetTec Technology is another new entrant to DVD copy protection. "A lot of copy protection technologies has been developed and are being studied now, however most of them are hacked by second solutions, for instance Clone CD and De-CSS," said John Hahm, assistant manager, sales team, SetTec. Called Alpha-Disc, the concept of SetTec's new technology is that it puts an Optical Head Ditching area on discs which can't be read illegally. In other words, said Hahm, "It is impossible to access [the] OHD area without special address information, that is, a special drive program. And if you try to copy from an original Alpha-

Disc, you can't have regular address information by a format rule." SetTec has begun its pre-promotion, and will continue with a major marketing campaign during REPLItch North America in February, according to Hahm.

In 1998, Link Data Security developed DVD-Cops, another one of the world's first DVD-ROM protection solutions. DVD-Cops is a copy protection software program that recognizes an original DVD and rejects all copies. It has been implemented by companies like IBM. The program supports Windows, NT and Win-OS2 and has support for all types of networks. The software that checks the DVD is protected by Link's Code Security. The program works by applying the protection (DVD-Cops) directly to a finished EXE file, adding the

protected application to the DVD image, and sending the data to the DVD factory as usual.

"Our technology can reliably...tell the difference between an unchanged original CD or DVD and a copy. Notice the word 'unchanged,' All other systems make a deliberate change, i.e., a special mark or signature on the media hoping that it will be difficult for hackers to copy this signature. We analyze the media once it has been produced and express the individuality in a 12-character code. As long as the original media is used with this code it will work. A copy would need another code," explained Pedersen.

Pledging Alliance

Forging alliances — with either content holders or media manufacturing

equipment suppliers — increases the effectiveness and success of any given copy protection technology. HST is focusing its partnerships on the mastering side. "Currently, our main alliance is with Media Morphics, who is handling the mastering capability. We are also working with Eclipse and ODC for incorporating our technology in their mastering software. We have done sample runs of the copy protection at Synchronicity in Utah to verify the manufacturing process," said Schneck.

SetTec is forming strategic alliances with a Korean and a Japanese company on DXD, according to Hahm. SetTec is also considering cooperation with a manufacturing company in order to apply alpha-disc to some specific hardware, although Hahm declined to disclose the specific company names.

And despite Verance's guaranteed penetration, that company has also discussed pairing with another company. "Getting the content folk and the manufacturers on the same wavelength," is what Warren says is most critical.

And although Verance's primary business partnerships are presently with the record companies, that doesn't mean it hasn't partnered its standalone software with more downstream entities, like Sonic Solutions. Because, as Warren pointed out, there is the question of whether Verance's watermark can be imbedded on a DVD during the mastering phase.

Be it a powerful copy protection alliance or one adopted by a standards body, copy protection for DVD and other formats is a mad scramble, with protection for "streamed" content poised on the horizon. Make that *far* on the horizon, according to Johannes Stegellner, director sales, Sony DADC.

"Despite growing possibilities in electronic media distribution, the market of packaged media is still growing...we expect an increasing demand for our

CD-ROM and later on DVD-ROM copy protection solution," he said.

But one thing about the hot button topic of copy protection is certain: "Pirates have time, money and the computer power available to them to break encryption systems," said Schneck. "The only way that will work is to make protection systems that take more time to break and cost extra dollars to the extent that it becomes nonprofitable for them to engage in this activity." ●