

Maximizing Pay-Per-View Revenue with Copy Protection

Each year, the entertainment industry loses hundreds of millions of dollars because of unauthorized taping of PPV programming. System operators are among the losers.

BY THOMAS H. CARROUX

Without copy protection, anyone can copy digital pay-per-view programs on a VCR simply by pressing the record button. Anyone can create copies just as good as original videos sold or rented in stores. These unauthorized copies cut into repeat PPV buys from the same household and new PPV buys from the taper's friends and neighbors.

Home taping seems like such a harmless activity until one calculates that the industry loses hundreds of millions of dollars each year from unauthorized copying. Besides, is it really fair to the creative talent for someone to obtain a copy of a movie like *Titanic* for the price of a blank tape? Let's look at the numbers.

In 1996, Chilton Research, on behalf of the Video Software Dealers Association (VSDA), surveyed 1,943 PPV households and found that 24.6 percent of the households taped PPV movies. The VSDA, a trade association for home video industry retailers, believes that PPV can cannibalize home video revenues.

Another study on the economic consequences of PPV taping was conducted by Commtek Communications and Nielsen Media Research in 1997. The Commtek/Nielsen research found that 14.3 percent of all viewers tape PPV programs frequently. If one takes the average of these two research studies, 19 percent of all viewers tape PPV programs frequently.

Last year, digital cable systems and DBS operators generated approximately \$322 million in revenue, according to Paul Kagan Associates. Even if only 19 percent of that \$322 million represents lost revenue, the research indicates that copying is a substantial threat.

It should come as no surprise to learn that the VSDA has requested that all PPV programs be protected against unauthorized copying. Multichannel video service providers who are upgrading their analog networks to digital should also be concerned about

generating the highest possible return on their digital network investment.

Digital Pay-Per-View

Compressed digital video and sophisticated electronic program guides make it possible for digital video networks to show more movies on multiple channels with more frequent start times. All of this translates into attractive PPV buy rates.

Once system operators start to deploy digital set-top decoders in significant numbers, Request Television estimates that the number of digital PPV channels

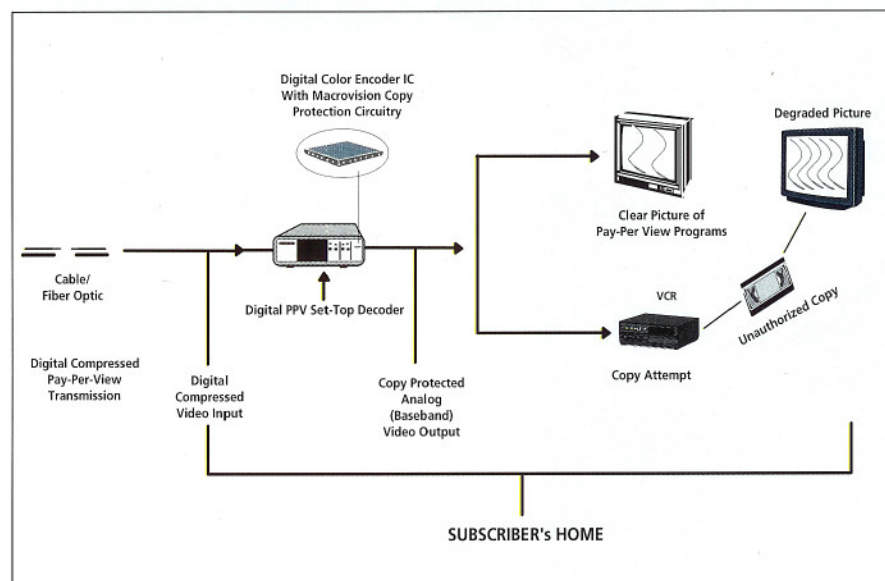


Figure 1. A pay-per-view copy-protection solution for a digital set-top decoder application.

will jump to an average of 27 PPV channels, compared to an average of 5.5 PPV channels in households with traditional analog multichannel video service.

With the expanded channel capacity, digital cable PPV buy rates should mirror those of DBS operators that offer 10-50 PPV channels.

Robert Myers, chief financial officer for DirecTV, commented at the Kagan Digital Entertainment Summit in February that PPV provides DirecTV with \$6 per month per subscriber. DirecTV subscribers purchase four to seven PPV buys each month, not including sports packages.

Dan O'Brien, president of Primestar, reported at the same conference that PPV provides 7 to 9 percent of Primestar's total revenue and that PPV revenue, as a percentage of total revenue, is expected to rise.

Kagan estimates that total PPV movie

revenues generated by digital cable systems and DBS operators alone will be \$1.04 billion by the year 2000. If unauthorized copying rates are allowed to remain constant because copy protection technology isn't activated on U.S. digital video networks, the potential industry losses could balloon to almost \$200 million by the year 2000.

How Copy Protection Technology Works

Macrovision works with a variety of equipment manufacturers to make it easy to incorporate copy protection technology into a digital cable or wireless network.

Forty integrated circuit manufacturers now produce chips, installed within digital set-top decoders, that convert digitally compressed video into standard NTSC or PAL analog output. This analog output is then

routed to the consumer's analog TV.

These same integrated circuits are capable of applying Macrovision's copy-protection waveforms to specific PPV programs. Decoder manufacturers, including General Instrument and Scientific-Atlanta, incorporate copy protection-capable integrated circuits in their digital set-top decoders.

To copy-protect, multichannel system operators simply transmit a software command from their headend to their digital set-top decoders (Figure 1).

The integrated circuit within the digital set-top decoder adds sequences of white pulses and pseudo-sync pulse pairs to several lines of the vertical blanking interval, and they aren't detected by the TV's automatic gain control (AGC) circuit.

But when someone attempts to make a videocassette copy, the pulses confuse a VCR's AGC circuit, causing the VCR to react to the video signal as if it were

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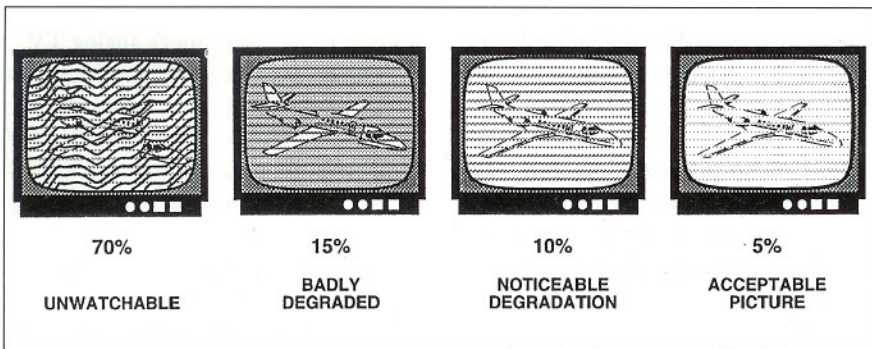


Figure 2. AGC and Colorstripe copy protection.

several times its actual intensity. The VCR responds by lowering the input level or gain and recording dim, noisy pictures with loss of color and loss of vertical hold.

The integrated circuit can also invert the color burst 180 degrees in two or four out of every 20 lines. This Colorstripe™ process isn't sensed by TVs but confuses a VCR's color processing

circuitry to add annoying horizontal bands of complementary color which appear when the unauthorized videocassette copy is played back.

The result is that a TV will display a normal, transparent picture of copy-protected programming, but most copies made on a VCR will display significant distortion (Figure 2). The combination of the AGC and Colorstripe copy-protec-

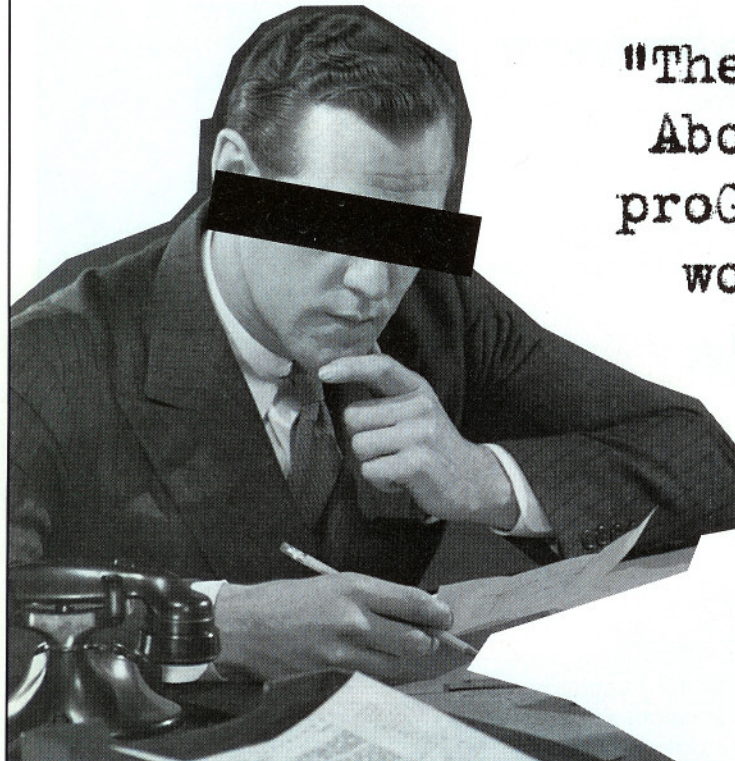
tion processes substantially degrades unauthorized copies made on 95 percent of the VCRs in the market today.

System Operator Experience with PPV Copy Protection

What happens if subscribers cannot tape PPV? Will they still order PPV? In a 1996 study, Chilton asked households that copy PPV movies whether they would continue to order PPV even if they couldn't tape a PPV movie. An average of eight in 10 replied that they would still go ahead and order PPV.

In Japan, Macrovision's technology has been used on over 100,000 PPV buys transacted by PerfecTV!, a DBS operator with 565,000 subscribers.

"To maximize our revenues, we broadcast many of our PPV programs several times each day," says Kenki Ishbasi, executive vice president of Nikkatsu Limited, a program provider to PerfecTV!



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"We believe that copy protection technology allows us to maximize our PPV purchases and also helps us generate multiple purchases by the same subscribers."

PerfecTV! copy-protects 13 PPV and pay television channels. In addition, Hongkong Telecom copy-protects 100 percent of its video-on-demand programs.

In the U.S., most multichannel video service networks are analog and cannot copy-protect programming because copy protection-capable integrated circuits are available only in digital set-top decoders.

This has created a situation in the U.S. where digital cable networks and DBS operators are hesitant about applying copy protection to PPV programs since consumers have been able to make copies of analog-distributed programs for so long. Some consumers now feel entitled to make copies of any and all programs.

On the other hand, rights owners fear

that if unauthorized PPV copying isn't thwarted now, preventing this practice will only grow more difficult in the future when digital recorders in the D-VHS and DVD formats become readily available.

The experiences of Hongkong Telecom, PerfecTV! and Singapore Telecom demonstrate that people will upgrade to a digital system whether or not they have the ability to copy PPV programs.

The benefits that digital video networks provide—for instance, more programming choices, more frequent start times, better picture and sound quality—are so compelling they overcome the so-called copying entitlement.

Moreover, if a subscriber is clearly made aware, from the beginning, that PPV taping isn't possible with their new digital video system, frustration is avoided. Announcements can be made before the start of a PPV program, or a visual icon can be inserted into the electronic

program guide indicating that a particular program is copy-protected.

All this is really nothing new. People already know that copying is not always possible. Since 1985, Macrovision's copy-protection has been applied to more than 2 billion videocassettes and, since 1997, to more than 3 million DVDs. The format may change from cassette to disc to set-top, but the fact remains that unless programming is protected, casual consumer copying will deprive the video services industry and copyright owners of millions of dollars of revenue. 

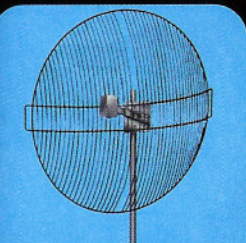
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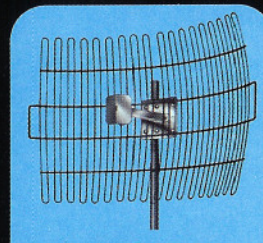
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