

Avtrex Briefing Paper:

PVRs and the Future of Television Advertising

Introduction

Since its introduction in 1999, the Personal Video Recorder (PVR) has become an object of passionate affection among its users for the freedom and control it gives them over their television viewing.

Currently in well over two million US homes, deployments are now accelerating as cable operators are discovering that PVR service can dramatically enhance subscriber satisfaction and drive digital adoption. The market appears poised for a rapid expansion of personal video recorder deployments driven by a cable vs. satellite battle for subscribers.

As many in the advertising community are concerned about the possible effects of widespread PVR adoption, we will explore in this briefing paper how PVRs, enhanced by Avtrex software technology, can in fact provide a much more effective platform for television-based advertising.

Personal video recorders offer an innovative and unique means for advertisers to combine the high-quality "lean back" experience of television entertainment with the targeting, tracking, recommendation functions and interactivity that are common on the Internet.

New advertising techniques, combined with digital technologies available on PVRs, can increase the effectiveness of TV advertising dramatically, raising its value from pennies-per-person to a level beyond that seen for other media.

Most importantly, intelligent advertising techniques utilizing PVR technology can revolutionize ad-supported television, creating a **win-win** model in which viewers see and interact with one tightly targeted 30-second advertisement, instead of trying to ignore 16 traditional ads.

Avtrex is a software technology company seeking to speed the deployment of these advanced advertising methods via high-function personal video recorder technology integrated with products from leading electronics manufacturers and system operators.

PVR Usage and Deployment Trends

Personal Video Recorders are now a firmly established and fast growing part of the TV landscape.

Consumers love the power PVRs give them to control when they watch their favorite shows. They like that PVRs help them find what they want to watch among the hundreds of channels of programming that many of today's digital services offer. And they love that the PVR's fast forward and pause features allow them to control how they watch TV (including giving them the power to decide what television advertising they view).

A variety of sources report extraordinary customer satisfaction with PVRs:

Reported Satisfaction	Source
76% agree "TV is much more fun"	April 2002 NextResearch survey of PVR users ¹
79% agree it is easier to find shows	April 2002 NextResearch survey
PVR owners report vs. their pre-PVR use - 20% more hours watching TV, 41% more channels viewed, 42% more programs seen	Fall 2002 C Cubed survey ²
90% say the decision to get PVR was a good or excellent value	Fall 2002 C Cubed survey
73% of cable DVR set-top users report it improved their overall satisfaction with their cable service	Scientific-Atlanta survey of DVR set-top users reported during October 2003 earnings conference call ³
83% were either "extremely satisfied" or "very satisfied" with their service	March 2003 In-Stat/MDR survey of PVR users ⁴
DIRECTV's churn rate (the rate at which customers stop their subscriptions) is reduced by two thirds for subscribers with PVR-equipped receivers (0.5% per month vs. DIRECTV's overall churn rate of 1.5% ⁵)	Reported in TiVo August 2003 earnings conference call ⁶

¹ <http://www.nextresearch.com/media/Default.htm>

² "DVRs: Climbing The Summit," by Shirley Brady, Cable World, Jul 28, 2003

³

<http://ccbn.tenkwizard.com/filing.php?repo=tenk&ipage=2390924&doc=4&total=28&TK=SFA&CK=87777&FG=0&CK2=87777&BK=FFFFFF>

⁴ <http://www.instat.com/newmk.asp?ID=581>

⁵ http://www.hughes.com/ir/pr/03_09_29_dtv.asp

⁶ <http://biz.yahoo.com/cc/8/33468.html>

How many TV households currently have PVRs?

Today in the US, the major providers of PVRs are:

- EchoStar, which first shipped PVR-equipped satellite receivers in 1999
- TiVo, which also first shipped in 1999 and provides service to standalone PVRs and co-branded service for DIRECTV DBS (direct broadcast satellite) receivers
- Scientific-Atlanta, one of the two major makers of cable set-top boxes, which started first significant shipments of PVR-equipped digital set-tops to cable operators in 2002

Based on the latest metrics from these suppliers, here's the current deployment picture:

Current Major Provider PVR Deployments

	Deployed	Source / Notes
TiVo	1,000,000	Press release 11/4 ⁷ - net subscriptions - includes those with standalone boxes and via DIRECTTV
EchoStar	1,000,000	Press release 9/24 ⁸ - DVR receivers sold
Scientific-Atlanta	563,000	Earnings release ⁹ - as of 9/30 - shipped to cable operators
Total	2,563,000	

Note: Different providers of PVRs report deployments using different metrics. TiVo reports current net DVR subscriptions. EchoStar reports PVRs sold and does not account for units sold but not currently used. Scientific-Atlanta reports shipments and these numbers include PVR set-tops purchased by cable operators but not installed. Time Warner Cable, Scientific-Atlanta's largest customer for PVR set-tops, reported in their October 2003 earnings call¹⁰ they currently had 250,000 PVR subscribers and predicted that 10% of their digital cable customers would have them by the end of 2003 (or over 400,000). Other Scientific-Atlanta PVR cable operator customers include Comcast, Cox and Bright House but they do not report specific subscriber levels.)

What are the trends for future PVR deployment growth?

The most significant current trend is the sudden and rapid emergence of cable operator provided PVR service. PVRs have been shown to dramatically reduce subscriber churn, drive digital adoption and raise customer satisfaction, while providing a competitive response to DBS PVR-equipped receivers. And cable PVR set-tops are very easy to deploy, allowing operators to ramp up quickly.

⁷ <http://www.tivo.com/5.3.1.1.asp?article=190>

⁸ http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=dish&script=410&layout=-6&item_id=452077

⁹ <http://www.scientificatlanta.com/news/03Oct23-1.htm>

¹⁰ http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=TWX&script=1010&item_id=793371

As a result, PVR deployments by MSOs (“multiple system operators” or cable companies) have started to accelerate dramatically. In fact, cable provided service has become the fastest growing PVR category in the year since first commercial deployment in mid-2002.

What makes this dramatic growth exceptional is that it is the result of a PVR set-top being offered by only one major cable box maker (Scientific-Atlanta) and primarily deployed by one MSO, Time Warner Cable. While Time Warner is the second largest MSO (with 11 million total subscribers), it still only represents 15% of the total cable market. Other major US cable operators offering Scientific-Atlanta PVR set-tops include Comcast (#1 in size with 21 million subscribers - 29% of the market), Cox and Bright House.

Motorola, the other major cable box builder, has started shipments of a PVR-equipped set-top during the fourth quarter of 2003. MSOs Comcast¹¹ and Insight Communications¹² will both start offering Motorola PVR set-top service in December of 2003. Comcast reported in their October 2003 earnings release¹³ that they plan to have PVRs “available to all of the Company’s subscribers by the end of 2004.”

Cable’s dramatic surge in providing PVR service has led to notable responses from the DBS industry.

Satellite provider EchoStar has launched a “free” PVR offer, together with an aggressive TV ad campaign featuring PVRs’ control, time saving and commercial skipping¹⁴. Rupert Murdoch, whose News Corp is working to complete its purchase of DIRECTV, recently predicted that next year would see PVR provided free to all new DBS subscribers¹⁵. DIRECTV recently announced a \$10 million ad campaign with TiVo and cut the price of the base PVR receiver to \$99.¹⁶

It seems clear that PVR service has become a key element in the battle between cable and satellite. And that this will drive a rapid acceleration in the deployments of PVRs.

In fact, this acceleration has already started. In only one year since first launch, cable now has almost 40% of the yearly PVR deployment rate.

¹¹ <http://www.sacbee.com/content/business/tech/story/7566119p-8507459c.html>

¹² http://www.insight-com.com/press/102203_2.html

¹³ <http://www.cmcsk.com/phoenix.zhtml?c=118591&p=irol-newsArticle&t=Regular&id=464588&>

¹⁴ http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=dish&script=410&layout=-6&item_id=442977

¹⁵ <http://uk.biz.yahoo.com/030908/80/e7uef.html>

¹⁶ http://biz.yahoo.com/bw/031016/165910_1.html

Current Major Provider PVR Run Rates

	Past Twelve Months	Source / Notes
Scientific-Atlanta	503,000	Earnings release - as of 9/30 ¹⁷ - shipped to cable operators - past twelve months estimate based on past earnings releases
TiVo	490,000	Based on press release 11/4 ¹⁸ and earnings release 11/21/02 ¹⁹ - net subscriptions
EchoStar	350,000	Estimates based on press release 9/24 ²⁰ and April 2002 announcement of 500K deployed
Total	1,343,000	

Given current trends in cable deployments and the upcoming holiday season, it is likely that deployments in the United States will reach **three million PVRs at the end of 2003**.

What of growth in coming years?

Cable operators and DBS providers will certainly continue to aggressively price and market PVR features because they will help them compete by reducing churn and increasing customer satisfaction.

There is enormous room for PVR growth in the cable market. Cable is already almost 40% of the PVR run rate with only Time Warner Cable (representing 15% of the market) engaged in wide-scale launches. As Comcast (with 29% of the market) and others start their major deployments, these numbers will grow quickly.

The aggressive PVR pricing and advertising by DBS will drive satellite receiver deployments. Cable vs. DBS PVR competition will also be driven by the continuing decades-long dramatic drop in hard drive prices. And, consumer electronic standalone PVR providers must respond to all of this with superior features and lower prices for their products and services.

These trends will combine to drive strong growth in PVR deployments. Research firm The Yankee Group recently predicted²¹ that PVR penetration will grow to **10 million subscribers by mid to year-end 2005** and will reach **19.1 million subscribers by the end of 2006**.

¹⁷ <http://www.scientificatlanta.com/news/03Oct23-1.htm>

¹⁸ <http://www.tivo.com/5.3.1.1.asp?article=190>

¹⁹ http://a423.g.akamai.net/7/423/1788/cbae8d60877be9/www.tivo.com/images/03_q3_earnings_press_release_final_112102.pdf

²⁰ http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker=dish&script=410&layout=-6&item_id=452077

²¹ http://www.yankeegroup.com/public/news_releases/news_release_detail.jsp?ID=PressReleases/news_09222003_mes.htm

Opportunities for Enhanced Advertising Using PVRs

The television industry may feel threatened by viewer ad skipping using PVRs' fast forward and other features. But the powerful capabilities of personal video recorders also offer brands, agencies and content distributors new opportunities for enhanced television advertising.

PVRs offer advertisers a new platform that combines the high-quality "lean back" experience of television entertainment with the power of targeting, tracking, search, recommendation and interactivity that consumers use on the web.

While we are still in the nascent stages of the significant changes that wide-scale deployments will produce, some major brands have already started exploring the new PVR opportunities.

Cadillac recently conducted a campaign with TiVo for its new SRX sports utility vehicle. A core element of this campaign was the use of the **"telescoping ad."**

Cadillac SRX 30-second ads seen on normal broadcasts were electronically "tagged" so an on-screen call-to-action would appear to TiVo users. This encouraged viewers to click through (the show they were watching was automatically paused whether recorded or being watched live) to see more information and short videos about the SRX that were already pre-recorded in reserved PVR hard drive space. Viewers could also click to request that more information about the SRX be sent to them or request their PVR to record a half-hour program about the new Cadillac appearing on a cable network.

This type of campaign highlights the core opportunity of the PVR for enhanced advertising - use of local hard drive storage and other powerful digital features to enable motivated consumers to instantly respond to an advertisement, become more engaged with the content, and strengthen a relationship with brands, products and services in a way that is not possible with a traditional 30-second ad.

While the above campaign is a good example of how a brand can use this new platform, other innovative types of advertising can provide even greater returns. These include:

Targeting/Personalization - PVR service providers can use aggregated anonymous household and even individual viewer information (on an opt-in basis) to target the advertising delivered via a PVR, a substantial improvement on how cable digital ad insertion systems can function today. But a far more powerful technique is to use profile information released by the household. PVRs can let users decide the type and amount of profile/interest data they want to release, resulting in the household receiving ads that are of interest to specific family members. PVRs can also support viewers' desire to be notified about ad categories/types relevant to them. This powerful "self-targeting" will improve the likelihood that viewers will enjoy and respond to the ads that are presented.

Advertising Search and Preview - In a 300-channel world, it is easy to be unaware of programs of interest without advanced search functions. Self-selection or targeting of advertising faces the same challenge in this mega-channel world. Advanced PVR technologies that support viewer self-selection of ads via search and preview capabilities will help advertisers cut through the clutter and reach consumers. This search and preview can be especially effective for the increasing use of “adertainment” advertising, such as the recent highly successful series of [BMW Films](#) (feature-film quality mini-movies featuring BMW vehicles seen via the web, cable networks and PVR downloads).

Viewer Response/Request Systems - The ability to capture and instantly transmit viewer requests or responses will be a powerful new tool for television advertisers. Additionally, advertisers can have the ability to collect granular information on ad viewing (while still anonymously aggregated to protect privacy), including details on play, fast-forward and rewind use of the PVR. This will enable advertisers to refine campaigns in near-real time using actual viewer data.

New TV Advertising Revenue Models - As PVRs move TV away from the interruptive interstitial commercial as the primary means of supporting shows, new ways need to be found to pay for programming lest consumers be asked to bear the cost of approximately \$600 per household per year that is currently paid by advertisers. One approach is to encourage users to pay for content by viewing targeted ads (covered in detail in a following section). This model, and other new TV ad revenue models, will utilize a software infrastructure that can track specific user interactions with advertising content as a means of confirming viewing to support payment.

Advertising Inherently Designed for the New Medium - As marketers explore new techniques for advertising via PVRs, they will likely place increasing demands on the presentation, search, targeting and response capabilities of the platform. As an example, an advertiser could deploy a multi-part interstitial ad within a program containing a five second “impression and hook” (to keep the user from skipping) followed by 10-50 second body. This might end with several viewer options including a user-permitted release of contact info to request more information or launching a longer-form video presentation that has been pre-recorded based on a previously expressed preference.

Using PVRs Can Increase Advertising Efficiency

The use of PVR functionality can raise the value of television advertising dramatically, beyond that seen currently for other media.

NBC's "Friends," with the highest priced commercials in primetime television, charges about \$450,000 per 30-second ad²². This is equivalent to about \$20 CPM (cost per thousand) against total viewers or about \$50 CPM against total 18-49 age group households. Even for 18-49s (a highly desired demographic), this works out to just five cents per household per ad shown. Of course, one reason this is so low on a per household basis is that the ad is shown to everyone, regardless of relevance or likelihood to buy, and there is no direct way to track how many viewers actually saw the ad.

(Note that PVR adoption rates are highest among 18-49 year-olds whose habits set the ad rates for much of television programming - this will magnify the impact of PVR-driven changes on advertising models and consumer behavior.)

Major brands spend far more than five cents per household on other forms of advertising. An example - the magazine insert. A brand will create a custom magazine-style advertising piece that is mailed with national magazines to subscribers. In some cases, these inserts can be 50 pages or more.

Assuming a per piece total cost of \$2, this is \$2,000 CPM advertising. Why are major brands willing to spend one hundred times more for these inserts than they do for primetime major network TV advertising? Targeting, providing a response path, and the ability to present more than "30 seconds worth" of message.

PVRs and their advanced features can provide targeting, direct response and expanded depth for TV advertising, with the added features of direct measurement of viewing (or skipping) of ads. With this, brands can refine their campaigns in near-real-time. PVRs can also report tracking information so that advertisers can pay only for actual ad content delivered. This could include a "pay for impression" (ad start) and "pay for time viewed/completion" with extra payments for user response or user provided data collected.

With these features, PVRs can dramatically improve the value and efficiency of television advertising. Brands can spend the same dollars they do now for a better-targeted advertisement that is more likely to cause the desired result, be it a sale, a request for more information or reinforcing the relationship with the customer. PVRs can provide all the benefits seen for the \$2,000 CPM magazine insert with the impact of video and accurate granular tracking of viewer use.

²² http://tv.zap2it.com/tveditorial/tve_main/1%2C1002%2C271%7C83533%7C1%7C%2C00.html

Watch to Pay

For the past 50 years, most television programming has been paid for by interstitial commercials. In the US today, about \$60 billion dollars is spent on TV advertising per year or approximately \$600 in TV ad spending per household.

As PVRs enable advertising to be viewed separately rather than being shown as an integral part of television programming, how will TV content producers and distributors be paid for their work?

A concept that the PVR can enable is "Watch to Pay." In this model, viewers can pay for content by electing to watch ads.

PVRs will enable the Watch to Pay model by providing consumers the means to select and watch advertising of relevance to them. PVRs also enable service providers to accurately and securely track ad viewing. Finally, PVRs will permit viewers access to programming by using their ad viewing as payment. This can be done on a program-by-program, channel, or service-wide basis. In this way, viewers will directly reward producers and distributors of television programming using their ad viewing time to pay for the specific shows they find interesting.

The "Watch to Pay" model is already being used on the Internet. An example is Salon.com, where web users can gain access to Salon Premium subscription-only content via a 12-hour "Day Pass" gained by clicking through a multi-part Flash-based ad. The initial launch of this concept was done with Mercedes.

This type of payment model could be deployed today using PVRs. An advertiser could sponsor access to a pay-per-view movie for EchoStar Dish PVR owners that allowed them to watch a movie for free in exchange for viewing and responding to a pre-recorded extended ad. Alternatively, EchoStar could put together a package of advertisers that would sponsor access to a PPV library for a month with a certain number of ad views, with viewers choosing the advertisements of interest.

Advertisers would gain a "good will" boost from this model. Rather than being seen as the unavoidable interrupters of the programming experience, they would now be the "sponsors" in the truest sense of the word, trading a period of the viewer's attention for free access to content of value.

Under this model, viewers should have a much better experience with TV advertising, being exposed to fewer ads of greater interest and relevance to them.

Will this style of advertising really result in viewers having to see fewer ads?

Television ads that are...

- Self-targeted
- Granularly trackable
- Have a direct response capability
- Can be of the length needed to carry the brand's message

...should have a value well beyond the "cents per household" range seen for today's TV commercials. These PVR ads should be valued more like the magazine inserts with their hundreds or thousands of dollars per CPM.

How many commercials might such a PVR viewer have to watch to "pay for" an episode of "Friends"?

Currently in primetime on major networks, on average about 8 minutes per half hour are devoted to commercials, promos and other non-program content. Considering that a \$2,000 CPM magazine insert advertising campaign is given a value by brands 100 times that of "Friends" (using the approximately \$20 CPM vs. total viewers), it would seem a conservative assumption that a full-featured targeted and tracked PVR-based campaign would be worth at least 20 times more than current commercials.

The result: one viewer-selected, 30-second advertisement with interaction and feedback instead of 16 traditional ads.

Watching one relevant commercial to view an episode of "Friends" that is otherwise commercial-free should feel like a big win for viewers increasingly overwhelmed by advertising. It also should be a big win for advertisers, who can present their ads to a much more receptive customer base while getting much better return data. And it will be a big win for program producers and distributors who can present a better, less cluttered product.

How Avtrex Products Support the PVR Opportunities

Avtrex is a software company committed to creating compelling products that are independent of platform and processor. We seek partners who excel at building and delivering consumer devices. Together, we want to create a new generation of intelligent products to revolutionize the home entertainment experience.

We believe that the new possibilities afforded by PVR technologies will make the powerful platform of television-based advertising more relevant and engaging for consumers while making it more effective for advertisers and programming providers.

Avtrex is speeding the deployment of high function PVR technology by making it available to leading consumer electronics vendors, cable operators, satellite providers and others for integration with their products.

Avtrex provides an exciting set of capabilities that increase PVR advertising efficiency by:

- Supporting viewer selection of ads of interest via search, preview, and identification of interests
- Managing viewer response and requests generated by PVR presented advertising
- Giving viewers control over the release of personal profile and interest data, to improve the likelihood they'll enjoy the ads that are presented
- Providing advanced reporting and tracking of ad views and user response
- Providing the software infrastructure to enable the "Watch to Pay" model (including supporting user interactions as a means of confirming ad views)

Avtrex is now prototyping advertising-supported content access (with all the advantages described in this briefing paper) and seeks interested partners.

For more information, please contact Avtrex:

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Terminology Note: In this paper, and throughout Avtrex literature, we use the term "PVR", or personal video recorder, rather than "DVR", or digital video recorder. We have chosen the PVR term because the acronym DVR has a historical usage in describing commercial digital video recorder products in use by television stations and networks that predates the creation of this important new category of consumer entertainment devices.

The PVR technologies described herein are the subject of pending Avtrex patents.

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