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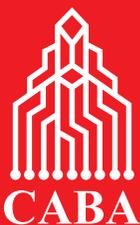
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CABA NewsBrief

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TV Anytime, Anywhere, Any Program

By Ken Wacks

Television delivered via the Internet has begun, and the changes will be profound. For many years we have been able to listen to radio broadcasts from around the world via the Internet. Why not watch TV programs via the Internet?

Until recently, commercial TV content was nearly impossible to find from legitimate sources on the Internet. At the 2008 CONNECTIONS Conference, there were announcements about deals by the television networks and producers to allow their content onto certain Web sites. This heralded the start of a revolution in TV content delivery.

Some CABA members have recognized the potential business value in expanded TV distribution options by participating in a CABA research study on video content. This article explains the new choices being offered to consumers for accessing video.

How can the Internet deliver TV?

Streaming video consists of Internet Protocol (IP) data packets (serial bit transmissions) interspersed with other IP packets carrying e-mail, Web content, data files, voice data (VoIP), etc. A popular use of video streaming is *YouTube*, which offers mostly amateur video productions.

Until recently, movie and television producers have depended on local TV stations, cable companies, satellite companies, and some telephone companies using fiber optics to broadcast their content. These producers shunned the Internet for fear of losing sales and ad revenues. However, some recent trials of Internet TV have demonstrated that:

→ Consumers will tolerate ads in commercial video sent via the Internet.

- Consumers want to watch missed episodes on the Internet.
- Consumers like video clips on the Internet that complement broadcast TV.

Broadcasters can extend consumer engagement with a TV show by offering background information about the plots, characters, and the production. Additional video clips may include out-takes, short features, and alternate endings. This is analogous to the extras found on most DVDs. These extras were originally packaged with DVDs to support a premium price for DVDs compared to videotapes.

The following table lists some of the Web sources for commercial TV:

Internet TV	
URL	Content
www.abc.com	ABC television network
www.cbs.com	CBS television network
www.cinemanow.com	TV and movies for rent
www.fancast.com	Selections from Comcast cable operators
www.hulu.com	NBC and Fox TV networks
www.myp2p.eu	Live sports including European teams

www.nbc.com	NBC TV network
www.surfthechannels.com	"All videos everywhere"
www.trueveo.com	Search engine for TV, movies, news, sports, music videos
www.veoh.com	Access to TV, movies, sports, user-generated video

The role of aggregators

About 70 per cent of consumers receive TV from an aggregator such as a cable TV, fiber optics TV (installed by telephone companies), or satellite TV operator. Each operator negotiates deals with content providers and assembles packages of channels. Content providers include local broadcasters, TV networks, and film studios. Many channels are sold to aggregators as bundles by companies such as ESPN, Viacom, and Universal.

Traditionally, cable TV companies encoded TV signals using the same analog format as was broadcast until the analog-to-digital transition in June 2009. Many cable TV and fiber optics operators are now encoding at least some channels into digital streams. The operator may also offer a digital stream carrying the public Internet. Figure 1 illustrates the multiple digital streams that are delivered to customers.

Each digital stream contains multiple TV channels. All the digital streams except the public Internet are sent from the operator head-end equipment to a set-top box. The box decodes the streams and delivers dozens or hundreds of TV channels selected by the customer using a

remote control unit. For customers with analog televisions, the set-top box also converts these digital streams to analog for connection to the TV. The Internet stream is decoded by a modem and delivered to a home personal computer (PC) or to a router for a home network. This splitting of data streams is illustrated in Figure 2.

Over the Top Video

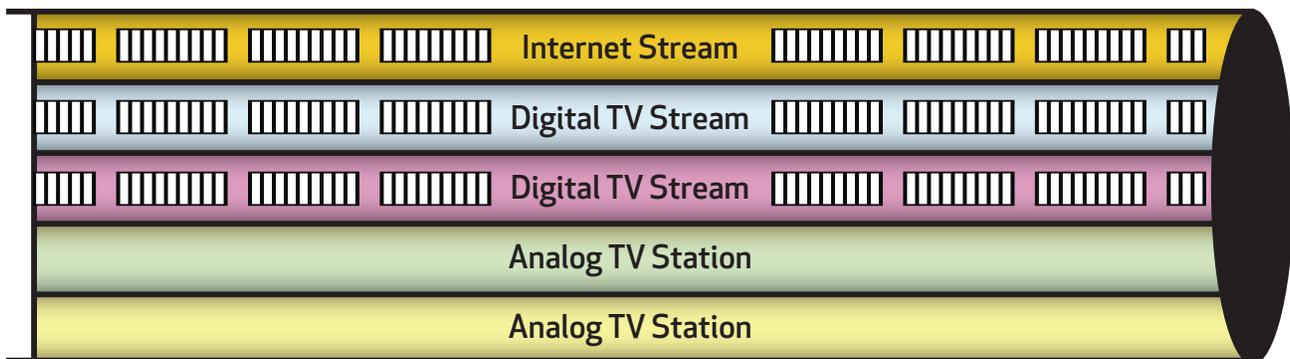
Video streams carried in public Internet traffic are called Over the Top video (OTT video). This term originated from the frequency allocation on cable. TV channels were carried in the lower frequencies on cable (up to about 750 MHz) and a digital stream was encoded at a higher frequency. This term may not reflect the present technology that includes digital encoding of at least some TV channels.

The term OTT video now means video delivered outside the package of channel lineups offered by the cable or fiber operator. This has serious implications for the business model of these operators. Customers can find some of their favorite shows free on the Internet by paying the operator only for Internet access and not for TV service.

Most customers are not dropping TV service because:

- Not all TV shows are available on the Internet.
- Most customers do not want to watch TV on a computer screen in the room where the PC is located
- Very few customers have technology to display computer video on a TV in another room.
- The quality of a streaming OTT video may be inferior to a TV channel and would look blurred on a large-screen TV.

Figure 1 – Video Streams on Cable or Fiber TV



▣▣▣▣▣▣▣ = Digital data packet

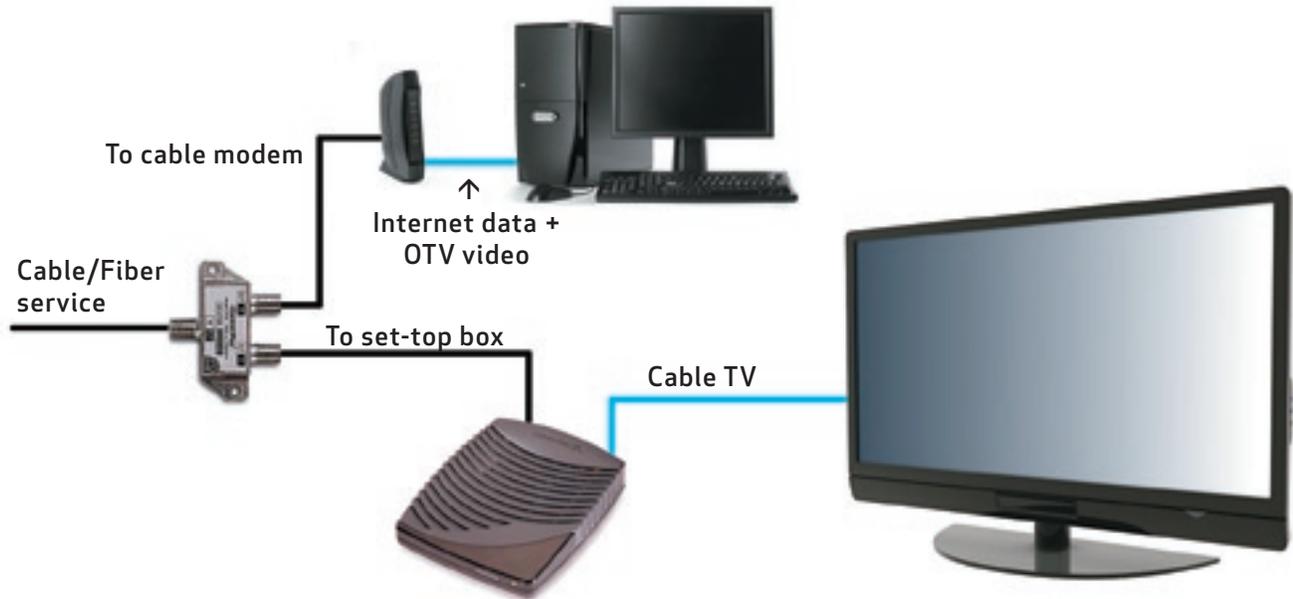


Figure 2 – Over-the-Top (OTT) Video

Also, broadcast TV still generates much more ad revenue per program than Internet TV. However, all these factors are likely to change as technology evolves, Internet-ad creativity improves, and customers demand any program, anytime, anywhere.

Among the changes that should concern cable, fiber, and satellite operators are the introduction of TVs with RJ-45 jacks to offer direct access to digital streams. TV makers demonstrated a few sets in January 2009 at the Consumer Electronics Show and will likely expand the offerings in 2010. What is not clear yet is whether unimpeded access to Internet video streams will be allowed, or whether access will be limited to a pre-selected set of videos. The latter approach is called a “walled garden.”

The content providers are likely to be the winners since consumers will be able to access commercial video on three screens: the TV set, the PC screen, and mobile devices such as video cell phones. Total viewing time for video may increase with more choices, providing more opportunities for delivering ads.

operators and consumer product makers seeking to understand the market potential, consumer attitudes, and areas warranting further investigation.

The primary goals of this study, which will be undertaken by CBS Vision and ComScore, are to:

- Understand better the OTT video market and the relationship to evolving devices for viewing video.
- Explore consumer awareness of OTT video.
- Determine where business opportunities exist by examining consumer behaviors, attitudes, and opinions through focus groups and interviews.
- Correlate the new findings with existing surveys of consumer habits and practices.

As is the CABA policy, a summary of the study will be available to CABA members when the project is completed in early 2010. The entire report will be available upon release from embargo by the sponsors within a year. **f**



CABA investigation of video content

CABA's Connected Home Research Council organized an investigation into OTT video with sponsorship from a diversity of companies, including: Bell Canada, Cisco Systems, Hewlett-Packard Company, Microsoft Corporation, Procter & Gamble, Telus and Whirlpool Corporation. These companies include

Dr. Kenneth Wacks has been a pioneer in establishing the home systems industry. He advises manufacturers and utilities worldwide on business opportunities, network alternatives, and product development in home and building systems. In 2008, the United States Department of Energy appointed him to the GridWise Architecture Council. For further information, please contact Dr. Wacks at 781.662.6211; kenn@alum.mit.edu; www.kenwacks.com.