

IPTV Emerges as Video Distribution Alternative

WHAT DOES THE IPTV BUZZWORD MEAN FOR CONTENT CREATORS? BY PHILIP DE LANCIE

It's hard to think of a subject area more littered with acronyms than video, which covers the gamut from ATSC and AVC to WM9 and YUV. Of course, not every acronym—or the technology behind it—gets used or thought about much in the course of one's daily work. But while some never get traction, eventually fading away, others seem to make the leap suddenly from the back burner, popping up everywhere. And so it is currently with IPTV, which stands for Internet Protocol Television.

The concept of delivering video over the Internet has been around for ages (measured in techno-years), but suddenly IPTV is a hot buzzword. So the time is ripe to start keeping a closer eye on IPTV, beginning with a few simple questions. What does the term really mean? Is there really something going on beyond the hype? And is IPTV of real significance

to professionals on the content creation side of video, or is it strictly a downstream delivery issue of concern to cable companies and telcos?

PROVIDER POV

Much of the recent hubbub over IPTV stems from initiatives announced in 2003 by Microsoft, which committed its Microsoft TV division to the development of solutions facilitating the involvement of cable and telco (phone) companies in the delivery of television programming. No surprise, then, that Microsoft's definition of IPTV reflects the interests of potential customers in this "provider" market.

"IPTV enables content providers to deliver their content in new ways, to new devices, and using different business models than are available in traditional broadcast TV systems," says Ed Graczyk,

above: DAVE Networks uses a standard high-speed Internet connection to download content to subscribers' homes for playback on PC or on TV via a dedicated set-top box.

Microsoft TV's director of marketing and communications. "But it's not about enabling TV over the open Internet. It's about delivering TV services over a secure, multichannel delivery system that is managed end-to-end by the operator and with the same quality of service you'd expect from any pay-TV service."

To illustrate his point, Graczyk compares Web-based streaming video to Microsoft's IPTV model, which has been scheduled for field trials by the telco SBC Communications in mid-2005. "The content comes into an SBC head end, and from that point to the TV in the home, it runs across SBC's own managed network so they can guarantee quality of service. This is in contrast to the experience of watching a streaming video from a site such as Atom Films, with the content going from their Web site across their Internet access provider network, then across the Internet backbone, then to the customer's Internet access provider network, and finally to the customer's PC. Because no one manages that entire path end-to-end, no one can deliver a guaranteed quality of service."

In the Microsoft TV model (see image at right), the input to the provider's IPTV system comes from the same sources that feed standard cable TV systems, both broadcast (e.g., network feeds) and pre-recorded (e.g., movie on videotape). But in addition to being available to the viewer in real time, the material is digitized and stored on servers, creating a giant database of programming that may be delivered to individual subscribers at their convenience. Instead of time-shifting by choosing programs in advance to record to a DVR (digital video recorder, such as TiVo), IPTV lets the viewers select programming after the fact from browser software that displays on their TV screens via a set-top box.

For cable companies, IPTV's video-on-demand (VOD) capabilities offer a desperately needed weapon in the struggle against market-share erosion by satellite services. For telcos, IPTV allows them to leverage their expanding high-speed infrastructure by offering customers the "triple play" of voice, data, and video. As for Microsoft, its IPTV Edition platform, with the company's vast

resources behind it, has emerged as a front-runner in the race to power providers' servers. The SBC deal alone, Graczyk says, is valued at \$400 million over 10 years.

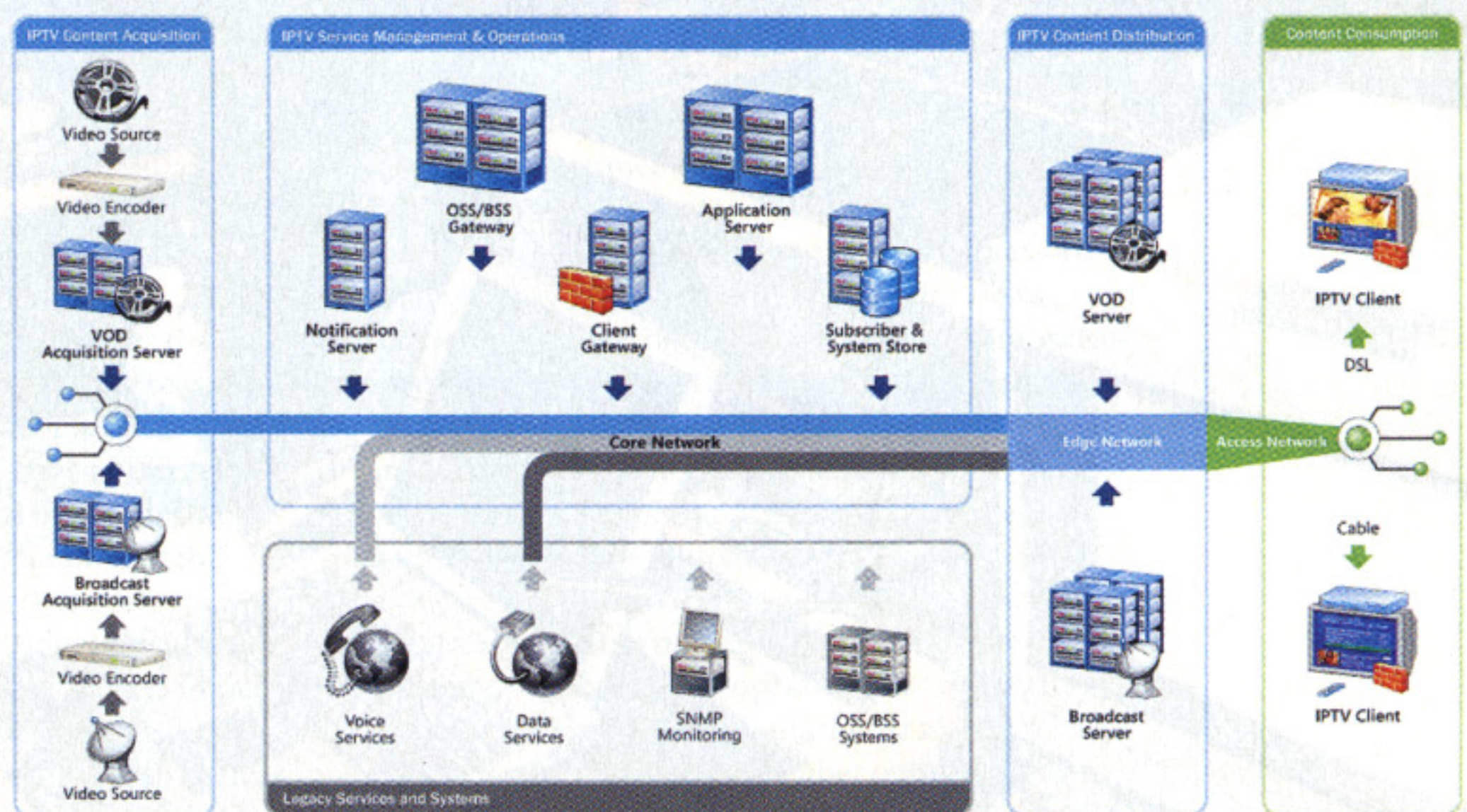
In addition to SBC, which plans commercial availability in late 2005, a half-dozen or more other providers in both the United States and abroad are in various stages of developing IPTV-based services. "IPTV has yet to be rolled out on a broad scale," Graczyk says, "although a number of smaller telcos are deploying solutions to their customers. In California, for example, a company called Surewest has rolled out IPTV services to 16,000 subscribers in the Sacramento area, and a number of other rural telcos in the United States are doing the same. In Switzerland, our customer Swisscom is one of the first tier-one telcos in the world to start trialing IPTV services with their customers. They recently began deploying a multichannel IPTV service to 600 households and plan to commercially deploy the service in 2005."

A BROADER VIEW

Although Microsoft focuses on private broadband IP networks managed by existing providers, others see a broader definition of IPTV. Atlanta, GA-based DAVE Networks, for instance, is diving in with a business model that involves licensing content (Hollywood movies, music videos, concerts, shorts, and localized programming) and making it available—encrypted—on a purchase or per-use basis from the DAVE TV portal, which launched in January 2005. On the desktop (Windows XP only), access to DAVE TV is via DAVE Media Center

below: Microsoft TV's platform for IPTV is focused on a delivery system managed end-to-end by cable and telco operators to provide the same quality of service as pay-TV services.

Microsoft TV IPTV Platform



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(DMC) software; TV viewing requires the hard drive-equipped Xport set-top box, which may connect directly to a cable or DSL modem, or to a router (allowing TV playback of content from any DMC-equipped PC on the same LAN).

"The distinct advantage of IPTV will be in the personalization capability of a database-driven medium," says Ken Lipscomb, DAVE's CEO. For content creators, the particularly interesting thing about Lipscomb's vision is it includes eventually



encouraging members to post their own content (contingent on proving ownership), thereby minimizing the cable provider's role in deciding what content is available to viewers.

"Filtering engines coupled with on-demand delivery," Lipscomb says, will make it possible for video professionals seeking wider distribution to "reach their audiences in unprecedented ways. DAVE's platform of IPTV also enables a significant increase in their earning potential because they will be able to cultivate ongoing relationships with their own exact audience."

Similar IPTV possibilities for independents are raised by Jim Funk, VP of product marketing at Akimbo Systems in San Mateo, CA. Akimbo is currently deploying an Internet-based VOD service paid for by monthly subscription. Akimbo downloads rights-protected programming—including Cartoon Network shows, selected CNN news documentaries, and Turner Classic Movies—directly to the Akimbo Player set-top box, which is connected to a TV and includes hard-disk video storage (see image on the following page). To build its content base, Akimbo is encouraging the participation of independent video producers and distributors.

"Even with hundreds of cable and satellite channels," Funk says, "it's difficult to get broadcast distribution, and the revenue equation is often not in the favor of the small producer. IPTV will allow them to distribute their video content directly to end users on an economical basis. Our service, for instance, requires very little investment on the part of content distributors. They can host their Windows Media video on their own servers or ours. They provide Akimbo with a content description that is incorporated into the Akimbo Guide and presented to users on the Akimbo Player via the on-screen interface. Delivery to the Akimbo Player is automatic, and Akimbo manages the customer billing."

Akimbo is marketed as an add-on rather than a substitute for traditional cable, but Funk sees several key advantages. "IPTV allows for more flexibility in program format. You don't have to produce video specifically for the demands of the traditional broadcast schedule in terms of program length. It also gives the ability to reach very narrow audiences who are not served by traditional broadcast or cable providers. In some cases, these audiences may be large in aggregate, but geographically dispersed. And IPTV supports flexible business models, such as pay-per-view or download-to-own, all protected by



digital rights management schemes to prevent widespread piracy."

INSTITUTIONAL MARKETS

Rich Mavrogeanes, founder and CTO of MPEG video solutions maker VBrick Systems in Wallingford, CT, agrees that IPTV puts a new era of independent broadcasting within reach. "The major advantage of IPTV over other forms of video distribution," he says, "is the ubiquitous nature of IP networks. Nowadays, no matter where you are—at work, school, or home—you probably have a broadband connection to the Internet. So content makers can start to bypass the distributors now. The technology exists and is easy to use, and the cost has dropped significantly over the last 5 years."

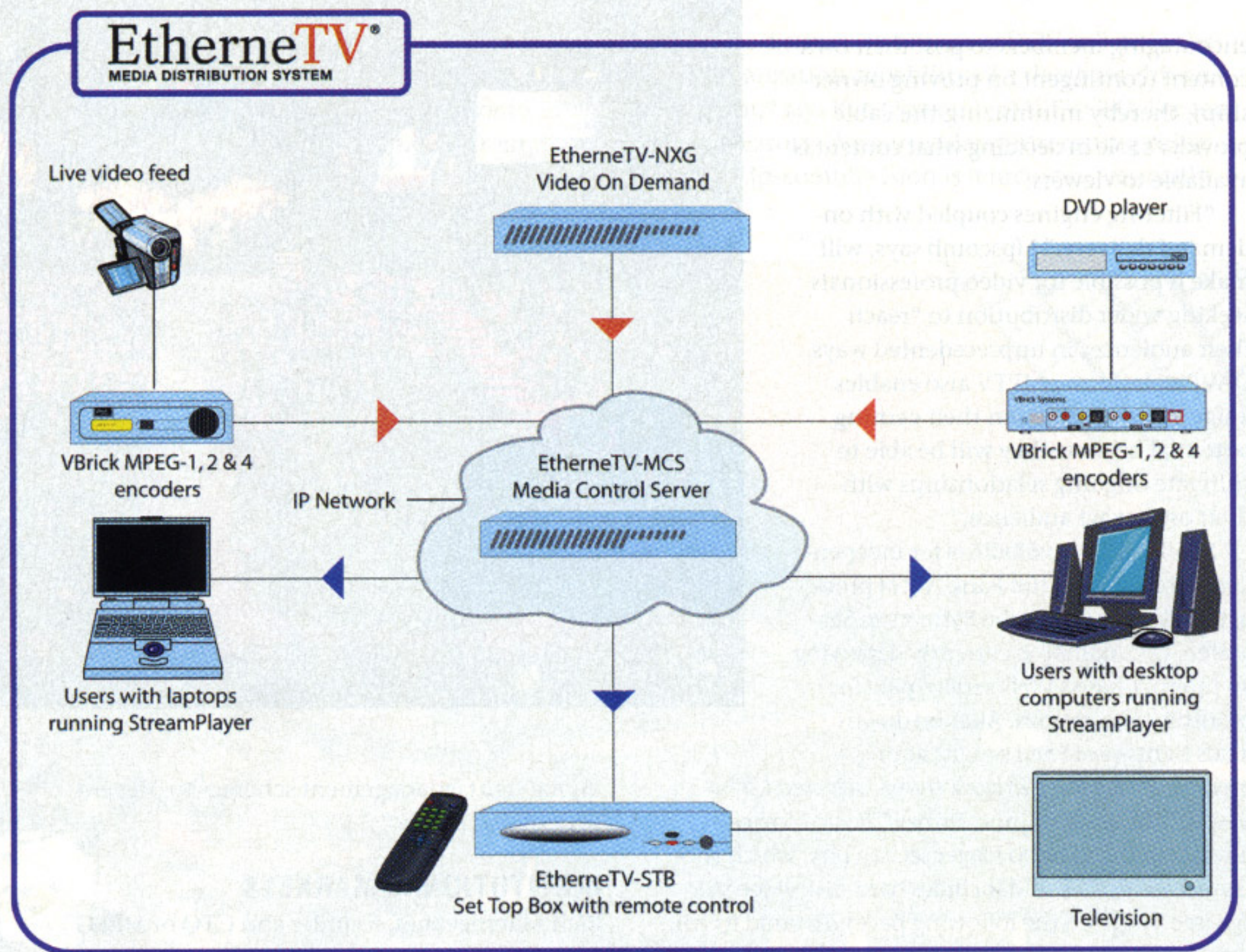
Although IPTV's impact is just beginning to be felt in the consumer market, it's already making its mark in the world of institutional video, where the infrastructure is more mature. In corporations, Mavrogeanes says, IPTV is being used for news distribution to the desktop, new product announcements, and trainings. "In government, it's primarily video surveillance. And educational institutions are using IPTV in place of traditional CCTV (Closed-Circuit TV) networks for distance learning, virtual field trips, and event broadcasts."

One spot where all of these various applications are already coming online is Houston, where VBrick teamed up with Phonoscope, owner of a privately owned 7,500-mile Metropolitan Area Network (MAN) featuring a 10-gigabit fiber optic backbone. Using VBrick's EtherneTV, a modular IP-based video

left and above: Using IPTV streaming rather than satellite uplinks, the University of Washington's "Come Together Washington" event presented a live audience in Seattle with simultaneous live HD feeds from Beijing and Rome.



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right: With VBrick's EtherneTV Media Distribution System, servers, encode/decode modules, and set-top boxes are integrated to create a modular IP-based video delivery system.

far right: Akimbo's Internet-based subscription VOD service downloads programming to a dedicated set-top box and plays it on TV via the on-screen Akimbo Guide.

below: The DAVE Xport box stores downloaded programming and plays it back at the viewer's convenience on TV, via a built-in on-screen interface.

delivery system that integrates servers, encode/decode modules, and set-top boxes, the partnership is offering IPTV services to a wide variety of local entities (see image above). "Our mission," Mavrogeanes says, "is to enable schools, businesses, medical practitioners, and the government to easily view and distribute DVD-quality video to desktops in the classroom, conference room, or to any location the network reaches."

The benefits for institutional users can be enormous, says Timothy Lorang, manager of production for UWTV Productions at the University



of Washington and national production manager for the ResearchChannel. Lorang recently produced a live event, "Come Together Washington," at the university in Seattle that included simultaneous, live HD television streams over IP from Beijing and Rome. The video streamed at 19.8 Mbps without packet loss or degradation, and was projected onto large screens for an audience of 7,000.

"We were able to establish the links days in advance of the event," Lorang says, "making it possible for our engineers to confirm the route and quality of the signal, and to troubleshoot any issues well in advance. And once we got the HDTV signal



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above: EtherneTV's Video on Demand system helps corporate, government, and educational institutions distribute video programming from servers to PCs or TVs for viewing.

up and running, we could keep it running at no extra charge. With a satellite uplink, we would have been subject to the availability of the transponder and to hourly transponder and uplink charges."

Lorang adds that a 100 Mbps connection is not uncommon in educational and business settings today, allowing potential viewers to stream HD content to their desktops and play it back with a free software decoder like the VLC media player (initially known as VideoLAN Client) or Windows Media Player. "For those who want to bypass traditional distribution channels, this is an excellent low-cost way to distribute HD content," which is now possible due to rapidly dropping prices to own HDTV acquisition and postproduction equipment. Lorang cautions, however, that "if you make money off content distribution, you will be facing the same problems faced by the music industry with the advent of MP3 files and peer-to-peer networks. You may lose control of how and where your content is distributed."

BANKING ON BANDWIDTH

Despite excitement about the possibilities, there remain major infrastructure constraints on consumer IPTV deployment. Even for standard-definition video, the size of the pipe to the viewer remains a daunting issue. "The current broadband infrastructure in the United States provides homes

with download speeds from 300 kbps to over 3 Mbps," Funk says. "Unfortunately, IPTV can't reliably count on sufficient bandwidth to deliver high-quality video using streaming technology."

In the near term, the solution adopted by services like DAVE and Akimbo that don't have end-to-end control is to download to local storage before playing, which limits their ability to present live material. At the same time, bandwidth limitations present technical issues that can affect the work of content creators targeting IPTV delivery.

"Some common video effects are not handled well by compression technologies," Funk says. "Producers should familiarize themselves with the tradeoffs of using different video effects and how that translates to the final compressed video that is ready for distribution. And because different IPTV providers may use different compression profiles, it may be a useful strategy to maintain a high-quality digital file in MPEG-2 or MPEG-4 at a low compression ratio that can easily be further compressed or transcoded to a different format."

The expense of deploying upgraded infrastructure to address the bandwidth issue is huge, even for giant cable and telco companies like those partnering with Microsoft TV. But the potential payoff is big as well, making it likely that if trial deployments go well, wide-scale rollouts will follow. "To exactly mimic the broadcast experience," Lipscomb says, "we would need at least 10-30 Mbps capability. This will be enabled over time with ADSL-2, FTTH [fiber to the home], and faster cable systems. Additionally, new wireless systems will also be able to deliver these speeds."

For the time being, then, IPTV is a tale of two markets. In the institutional realm, where bandwidth can be guaranteed, deployments and applications are already a practical reality, while the consumer arena is still in more of a trial phase.

If all goes as planned, however, IPTV will eventually be as commonplace as standard cable is today, offering viewers new levels of choice and flexibility, and perhaps providing new opportunities for those who create programming. "As soon as networks can provide 10 Mbps or more to each location," Mavrogeanes says, "you will see consumers and enterprises changing over to IPTV for their video content viewing." ■

Philip De Lancie is a freelance writer covering technology and market developments for production professionals in video, film, audio, interactive multimedia, and the Internet.

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Akimbo
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Microsoft TV
www.microsoft.com/tv

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