



## 2009 IPTV Update

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### HIGHLIGHTS OF 2009

Just as YouTube was the big story of 2007 and 2008, the rapid proliferation of high-quality, professionally produced video content from a growing number of websites is revolutionizing the video delivery paradigm in 2009. Sites owned by major broadcasters, such as cbs.com and hulu.com have made it possible for anyone with a high-speed Internet connection to view on-demand, first-run episodic programming without any need for traditional television delivery systems such as cable TV, satellite TV, or local broadcasts.

Internet Video growth in all aspects of quality and quantity continues apace in 2009. In fact, every minute, an average of 20 hours of new video content is uploaded to YouTube according to the site's blog—enough to equal 100,000 feature films a week. The volume of online viewing is also growing rapidly, to say the least. Today, more than 14 billion online videos are viewed each month according to Comscore.<sup>1</sup> In April, 2009 alone, Comscore estimates that over 150 million U.S. Internet users watched 111 videos per viewer. Google video sites reached a record high of 107.9 million viewers, with Fox Interactive Media second at nearly 60 million viewers. And that same month, both Yahoo! and Hulu had over 40 million video viewers.

IPTV network installations continued their rapid growth this year, giving more consumers a fourth choice for television programming, alongside cable, satellite, and local broadcast sources. Although these

networks have yet to reach the majority of U.S. households, they are rather popular wherever they are available, with a surprisingly large proportion of consumers electing to switch to new IPTV services. For example, Verizon's FiOS TV service was available to 10.3 million homes by the end of June, 2009<sup>2</sup> garnering 2.5 million subscribers for a 24% take rate—impressive for a service barely three years old.

Operators of 3G mobile networks have also been busy developing and rolling out mobile video services. It is not yet clear which delivery method will dominate: individualized streams to each user over high-speed wireless data networks, or broadcast video based on the newly developed ATSC standards. However, new mobile video applications and services abound and audiences respond. Nielsen's "Three Screen Report" estimates over 13 million Americans tune into video on their mobile phones.<sup>3</sup>

MSNBC, for example, tripled its mobile audience during the last four months after adding videos such as "Today," "NBC Nightly News with Brian Williams," and "Meet the Press" to their regular mobile offering.

### IPTV, INTERNET TV, IP VOD, INTERNET VIDEO

To many readers, including those of last year's IPTV update, the terms *IPTV* and *Internet video* are no doubt quite familiar, and have

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In addition to collaborative development engagements with large organizations like Xerox PARC, Ericsson, and the American Film Institute, he has held leadership roles in numerous early stage companies. These include positions with start-ups in online video editing, content management, streaming, and advertising. Three were subsequently acquired by Ariba, IBM, and Microsoft.

**Wes Simpson** (above, right) is president and founder of Telecom Product Consulting, an independent consulting firm that focuses on helping companies develop and market video and telecommunications products. He is a frequent speaker and analyst for the video transport marketplace. He is author of the well-received books "Video Over IP" and "IPTV and Internet Video" from Focal Press. Simpson has 28 years experience in the design, development, and marketing of products for telecommunication applications. Before founding Telecom Product Consulting, he was COO of VBrick Systems, Inc., a manufacturer of MPEG video equipment. Earlier, at ADC Telecommunications, Simpson was the director of product management for the DV6000, a market leading video transport system. He was a founding member of the Video Services Forum and a member of its board of directors from 1997 to 2001. He holds a BSEE from Clarkson University and an MBA from the University of Rochester.

fairly narrow definitions. Unfortunately, as the market evolves, new services are appearing that cannot be easily classified into either category. For example, consider a service that delivers a sequence of programs as a continuous “channel” over the Internet, funded by advertising, which plays on a computer screen or a mobile device. This might best be called Internet TV, to differentiate it from IPTV which is essentially always delivered over a private IP network, not the Internet. A common application of *Internet TV* is live news programming, including a variety of offerings from national 24-hour networks as well as local broadcasters during their daily broadcasts.

Another service that does not easily fit into either of the two original categories is a subscription-based service that allows viewers to watch on-demand movies and prime-time TV programming on a television via Internet-connected set top box. This service could be called *IP VoD* to denote the higher level of user expectations for professionally-produced content compared to the highly variable world of Internet video. Television networks are racing to make their programs available on demand using IP VoD, allowing viewers the flexibility to watch episodes of programs they might have missed or to sample content they might not be familiar with. BBC iPlayer’s pioneering efforts are a good early example of this phenomenon. The iPlayer enables Internet-connected viewers in the United Kingdom to watch BBC TV programming for up to seven days after their original broadcast, allowing their audience to “catch-up” on episodes they may have missed. This service is also available over mobile phones on a beta trial that will soon expand to include many 3G networks.

## DOING THE HULU

Hulu is an IP VoD service that is jointly owned by News Corp, NBC Universal, and Disney. It offers a few hundred different program choices to any U.S. viewer with a broadband connection to the Internet. (Discussions are reportedly under way to expand the service to cover the U.K. as well.) Available content includes both full episodes and excerpts from television series, most of which are shown on networks operated by Hulu ownership partners. Video and audio quality are uniformly high, and production values exceed those for user-generated video sites such as YouTube. Strong viewer acceptance has been exemplified by Hulu’s 500% growth per year in streams watched, second only to YouTube’s astronomical popularity.

CBS and its TV.com site may prove to be a competitor now that they have thrown their hat in the ring with the *TV Everywhere* initiative being championed by Time-Warner and Comcast. Both companies have announced plans to deliver premium programming online to their existing subscribers. TV Everywhere has big names and big bucks riding on a fee-based commercial release that is set to include TBS, Cinemax, and many others. HBO recently announced it will deliver its encrypted TV Everywhere video content using the Adobe Flash platform.

But Hulu was first out of the gate with programming from NBC, Paramount, Fox, and others. That, combined with rapid play start-up,

a slick user interface, and new desktop version that streams shows directly to a television set, Hulu has returned its backers good market share return for its original \$100 million investment in 2007.

## WE WILL ROKU

After paring down an IP set-top box to a minimal set of functions, leaving only an IP interface, a stream decoder with A/V outputs, and the ability to run a simple user menu system from an infra-red remote, the Internet Video Appliance category was created. A pioneering example is the Apple TV device, which is popular with many viewers even though an Apple Mac (PC) is typically required nearby. Internet video appliances are proliferating, as viewers seek out products that will allow watching full motion video delivered over the Internet on a television display—without requiring a full-time PC connection.

One incarnation of this capability is the Roku box. This Internet-connected device receives streaming video from various sources and outputs directly to a television monitor, without requiring any other computer hardware or software. Weighing less than 1 lb, the Roku supports Composite, S-video, Component, and HDMI as well as SD and HD modes at 16:9 720p and 480p (anamorphic). Providers digitize four different bit rates for each piece of content, and Roku selects which to deliver, based on the customer’s broadband speed rate, ensuring no delays from re-buffering. A 1 Mbit/sec Internet connection is required for streaming to Roku—which can deliver quality comparable to an off-air broadcast. The requirement for HD, however, is a minimum of 4 Mbits/sec

Like many new companies with breakthrough potential, Roku maintains their streaming paradigm is supreme. “We don’t believe in disk drives,” stated Timothy Twerdahl, Roku VP of Consumer Products, “they fail, they’re noisy, and people don’t want them in their living room.”<sup>4</sup>

Hulu and Roku do not yet support interoperability, but this may be due more to economic as opposed to technical issues. Both technologies have emerged in the past year, and both point toward a future in which viewers will be given more control over when and where they view content. One potential obstacle to a union between the two is the precedent already set when Hulu withdrew its content from Boxee, a provider of a PC-based Internet video appliance software package. Clearly, this situation will merit continued monitoring as both technologies increase their viewership.

## CONTENT HUNTERS

One of the big problems facing Internet video users is finding high-quality content that is worth watching. Today, a computer can help a user search for content, whereas a TV, until recently, displayed only existing linear channel programming. But this is changing, and video consumers increasingly operate at the heart of their own content kingdom, as new set-top and streaming devices provide

slick electronic program guides (EPGs), bountiful DVR storage access, and increasing interactive benefits. Services such as searchonlinetv.com and blinkx.com are early attempts that have sprung up to fill that need. TiVO CEO Tom Rogers says his company's new search function makes channel surfing obsolete and "Google-izes" TV so people can see *what* they want, *when* they want it. 2009 has been a banner year for companies such as Sezmi that claim their TV 2.0 solution surpasses existing television services because it is the first to offer "traditional TV content, movies and internet video in a single easy-to-use product." And the news media loosely labels as "IPTV" virtually any new service that happens to use an IP data network for any portion of their delivery system.

## IPTV GROWTH

IPTV services continue to gain market share in most regions around the world. AT&T's \$4.6 billion investment in U-verse IPTV, which began in 2004, has reached its millionth customer milestone this year. The same achievement goes for China Telecom. The majority of their subscribers are in Shanghai, but they now plan to expand development efforts to deliver services across China. France Telecom dramatically increased viewership to 1,899,000 by the close of 2008, reaching a cumulative annual growth rate of 120% over the past three years.<sup>5</sup> Market research firm MRG predicts that the number of global IPTV subscribers will grow from 24.4 million in 2008 to 92.8 million by 2012 (with service revenue totaling more than \$37 billion by that time). With forecasts that more than 32 million homes in the U. S. will have 10 Mbits/sec or higher access pipes by 2012, a foundation for mass commercial IPTV and Internet video is fast approaching.

## INTERNET VIDEO GROWTH

Consumption of online video over the web continues to explode. For example, during the 2008 Beijing Olympics, NBC offered 2,200 live hours to Internet users, serving over 75 million streams. Other recent data further validate this trend, as do these from February, 2009:

- 75.5% of the total U.S. Internet audience viewed online video.
- The average online video viewer watched 312 minutes of video (more than 5 hours).
- 98.8 million viewers watched 5.3 billion videos on YouTube.com (53.8 videos per viewer).
- 41.2 million viewers watched 384 million videos on MySpace.com (8.5 videos per viewer).
- The duration of the average online video watched was 3.5 minutes.

In the U. K., the online video audience grew 10% within the past year to 30 million users and in France 16% to 27 million users.

Likewise, economic returns, while still gathering steam, show impressive momentum. By mid-2008, Apple Computer had reported

more than 50,000 iTunes movie downloads daily, priced now at \$2.99 per film (standard definition), and \$3.99 for new releases. Online video streaming advertising is also expected to exceed \$6 billion by 2012. Today's 20 million broadband TV service subscribers are forecast to nearly triple by 2012, according to Gartner. Spending on mobile advertising is forecast to grow by 42% from 2008 to 2013 in revenues, reaching \$2.79 billion by 2012.

Although widespread monetization—the "holy grail" of online video, as Google CEO, Eric Schmidt calls it—remains elusive, things are moving in the right direction. In July, 2009, Google CFO Patrick Pichette asserted (and analysts now agree) that YouTube will turn profitable in the near future and that "we actually see a very profitable and good business for us."<sup>6</sup>

## NEW VIDEO APPLICATION DEVELOPMENTS

Custom Internet video channels are becoming a new online broadcast format, serving a function not dissimilar to what websites did for publishing. They provide global video outlets for large corporations and mom-and-pop-size operations alike. The critical view is that channels are merely a thin disguise for video library content connected by hyperlinks on a web page. With so many traditional broadcast channels available, are thousands more like those offered by sites like Channels.com and MediaChannel (www.mediachannel.com) really necessary?

Magnify's Steve Rosenbaum takes issue with this question because custom business and personal channels differ from broadcast channels. They are essentially *communities* in which "viewers are submitters, viewers are voters, viewers are makers."<sup>7</sup> In the same way, live-casting Ustream's founder John Ham challenged us to imagine a mobile world in which live content will create connected roaming communities. According to Rosenbaum, Ham, and others, it may be smarter to think of online channels as the latest digital mechanism enabling any basic PC video producer to reach social and professional audiences in fundamentally new, powerful ways.

## TELEPRESENCE, SURVEILLANCE, AND CONTENT TRANSPORT

Developments by HP, Cisco, and other vendors have pushed videoconferencing into the world of desktop PCs interfacing with IP networks from the previous realm of dedicated rooms with specialized telecom data circuits. Another trend is that web cams have become widespread, particularly for low-cost, realtime communication and are being applied to everything from security surveillance and business teleconferencing, to weather watching, to social networking. These systems that once ran at low 10 frames/sec or less now have impressive 30 frame/sec specifications. Likewise, video surveillance devices have migrated to IP technology, largely as a result



of the ability to use existing or easy-to-install Ethernet data cabling in place of coaxial video cables.

In these networks, IP protocols and Ethernet cabling is simply used as a means to provide connectivity between cameras, video recorders and displays. Additionally, IP networks are moving video files to and from virtually every studio, post house and broadcaster in business today. Limelight Networks alone stores over 4 PB of content on their servers in the course of providing such content distribution services.

## OTHER IMPORTANT ADVANCES

### iPhone 3GS – More Power to More People

Although the latest iPhone 3GS does not include HD, has limited editing features, and some content search complaints from users, it has truly upped the game in consumer videography. That is, with its 30 frames/sec 640 by 480 resolution specification, consumers will be able to easily capture and upload high-quality video to business, personal, and news networks everywhere. This could have a big impact on how citizen video broadcasting is done.

### Yahoo! Widgets

Yahoo! has brought its web experience to Internet-enabled TVs with “widgets.” (For a demo, just web search ‘Yahoo! TV Widgets demo’). The Yahoo! “widget engine” is software that can be embedded in TVs and other consumer electronic devices. Together with a widget gallery server and a development toolkit, developers can deploy applications on widget-enabled TVs. Some models from Samsung and LG are in U.S. stores now; more will ship later this year from companies such as Sony and flat-panel HDTV leader Vizio, with others available soon in Europe. These developments are another early indicator that a slow, but steady integration of traditional television and online delivery services and devices is under way.

### Winners and Roadkill

Some broadband VOD start-ups that tried to monetize content delivery have come and gone. After nearly \$50 million in top VC funding, Akimbo’s web-based VOD solution went belly up last year. Joost, founded by the original Skype team, just pulled out of their peer-to-peer programming strategy.

Despite the setbacks, dozens of other small and large ventures continue to launch new Internet video programming services. Howcast.com provides video lessons in everything from poker playing, to automobile shopping, to first-aid. Livecast sites such as Ustream.tv allow businesses and consumers alike to broadcast their own live channel by simply plugging a web cam into Ustream’s browser interface. Developments such as Google’s \$106.5 million acquisition of video compression innovator On2, announced as this article goes to press, bode well for improved web video quality and price/performance. Online advertising networks such as ScanScout and YuMeNetworks, as well as new in-stream ad insert technologies,

are helping ensure the emerging online video industry is likely to be a lucrative venture.

## An Exciting Future: Robust IPTV and High Quality Internet Video

The future of television is about participation, as many of today’s broadcast executives understand. Programming is becoming increasingly controllable through links to web content—sport stats, cooking tips, election analyses, and so on. But are we there yet?

It would be hard to point to hotter technology media growth categories than IPTV and Internet video. We may not have yet achieved final standards and scale, but industry executives around the world recognize that we have embarked on one of the most creative, exciting periods for the industry.

The attraction of portable media is individual access to watch or listen to your choice of content when and where you want to. The trail to mass market for mobile media may be led by a new millennial generation born after 2000 that is more likely to embrace the convenience of a new breed of mobile devices and functionality. It has even been projected that, by 2015, hard drive capacity will grow to 16 TB (enough to hold all the music that was ever recorded) and by 2021 to 256 TB (640,000 hours of video, or all the video and audio ever created up until 2009 for movies and television—73 years of continuous viewing). But it’s not about the technology.

“You can’t underestimate the importance of delivering great experiences to the consumer,” says former Slingbox CEO Blake Krikorian. “In the past, the consumer didn’t have as much power so things could be force fed. In this day and age, the consumer has to have a say in things and [has] to be delighted, but also the business models need to make sense.”<sup>8</sup>

But the next phase belongs to those organizations—large or small, start-up or incumbent—willing to embrace the future by mastering the processes and markets that emerge with any new technology. Only creative initiative and the forces of the marketplace will fuel and vet the next period in this extraordinary evolution of video transport as we continue to evolve from the on-air to the online world.

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