

**STREAMING MEDIA, IP TV, AND
BROADBAND TRANSPORT:
TELECOMMUNICATIONS CARRIERS
AND ENTERTAINMENT SERVICES
2006-2011**

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EXECUTIVE SUMMARY

1.1 Streaming Media Market Today

Streaming media is a method of transferring rich digital media across a network without requiring any local data storage. The streaming media landscape has changed dramatically over the past twenty-four months (see *Streaming Media Market Overview*, INSIGHT Research, 2004). As an industry, streaming media has survived the introductory phase and evolved to the point at which there are proven business models, a sufficient number of consumers ready to buy, and stable technologies to support the industry's future growth. As streaming evolves beyond the early adopter phase and strides toward the mainstream, the industry is turning its attention away from the technology in order to concentrate on the applications and communication tools that will restructure the entertainment experience for consumers and increase information productivity for businesses.

The most important factor driving the consumer segment is content on demand. Consumers want to be able to listen and watch anything they want, at any time and in any place. The amount of video content available has grown apace with demand: a few broadcast channels expanded into the hundreds on the cable networks, and now thousands more movies are available at video rental stores. Moreover, the web has conditioned the consumer to expect services at any time, while wireless devices make it possible to connect from any location. Thus, the consumer's desire for the widest possible array of audio and video content on demand is the most pervasive driver of the streaming media industry.

Consumers have demonstrated a willingness to pay for this content, as well as an acceptance towards exposure to commercials in return for content they want. INSIGHT Research believes that the growth of paid content for individual purchases of video will be quite robust once the mechanisms are in place for consumers to

easily find the content they desire and distributors deploy the mechanisms to collect the revenue.

The alternative to paid content is ad-supported content. In 2005, broadband Internet reached 56 percent of households and, in doing so, created a potential audience of critical mass for advertisers. The size and spending power of this online audience has produced significant shifts in advertising spending. According to ZenithOptimedia, spending on Internet advertising will increase from 2.5 percent of total advertising in 2004 to 4.3 percent by 2007. We expect the shift toward online advertising to be a significant factor driving usage of video streaming over the Internet. Advertiser dollars follow the consumer's eyeballs: as consumers spend more time in front of the PC, advertisers are more willing to spend money to reach them.

High bandwidth at the receiving station has been critical to the development of a robust streaming media industry. Since broadband penetration has increased over the past several years, the use of streaming has increased dramatically. The number of broadband residential subscribers is expected to reach 88 million homes (75 percent of all US homes) by 2011. As broadband users are the group most likely to request streaming content, INSIGHT's research suggests a tremendous upside to the streaming industry during over our forecast period.

Another factor driving the positive growth of streaming is that the entertainment industry has finally hit upon a few business models related to their content distribution that consumers can understand and value. In 2003 we wrote, "*The Recording Industry Association of America's heavy-handed attempt [i.e., selective criminal prosecutions] to enforce its copyright of digital music files being shared across peer-to-peer networks brings into stark relief the problem of an old business model slamming into a new media—and similar business breakdowns are just down the road. TV and cable broadcasters, movie studios, and content providers of every stripe are about to run up against similar property rights and distribution issues because, as the recording industry correctly contends, broadband access to the Internet makes digital content readily accessible to a steadily increasing worldwide audience.*" Today streaming audio is a mainstream application—and the contentious issues raised by sharing services seems to have been drowned out by the ringing sounds of corporate cash registers.

RealNetworks, for example, has a very popular streaming audio service and Apple computer has been extremely successful with its pay-per-download iTunes service (recently expanded to offer video downloads as well). The demand for streaming audio services is sure to continue to grow, which will, in turn, likely position streaming on the leading edge of what will happen in other segments of the entertainment industry over time.

In 2006, video streaming has reached the point that audio streaming reached several years ago. There is a critical mass of broadband users, content providers, and sponsors. In a pattern similar to audio, some video services also started with a subscription model. INSIGHT's analysis suggests, however, that over time, ad-supported video will dominate. Consumers are willing to watch a short commercial prior to seeing the content they want. In many cases, the content is news or sports content that is also available through other distribution channels. The new content aggregators, such as Yahoo, can attract millions of eyeballs and match video content with the right advertisers. The business model here is compelling.

Furthermore, the consumer has a choice of delivery options for this content. Content that may have traditionally been delivered via broadcast, cable TV, and satellite providers can now be delivered over the Internet via specialized content distribution networks (CDNs), across IP networks provided by companies such as Verizon or AT&T, or most recently on cellular networks by companies such as Sprint. Although we are confident that consumer desire for on-demand content will drive the streaming industry, it is less clear whether these three access methods will share equally. Each delivery option has its advantages, and since it is still early in the development of these services, future agreements or unforeseen obstacles could alter their growth prospects.

While streaming technology presents new opportunities to many industries, it also challenges the status quo in others. The promise of a huge incremental revenue opportunity will be very disruptive to the media and entertainment industry. Traditional aggregators of video content, such as cable MSOs and satellite TV providers, now face new competition from outlets that stream media over the Internet, over IPTV networks deployed by telephone companies, and to handsets offered by wireless providers. These new distribution outlets may choose to set up a "walled garden" and manage or restrict the content that is available through their

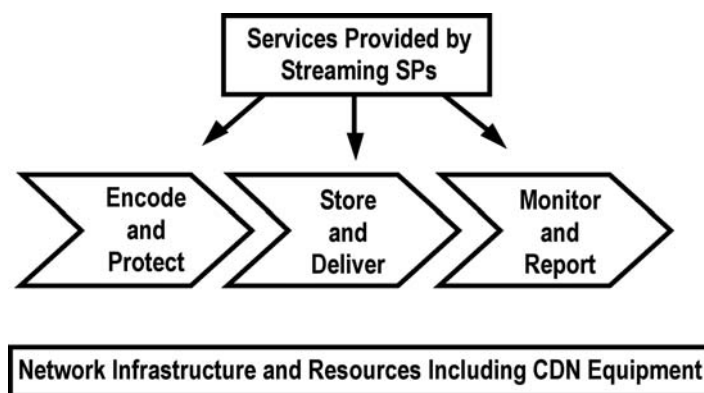
access points—or make it truly open, allowing any content provider access to any consumer.

A truly open environment would foster disintermediation. Disintermediation refers to the elimination of the middleman, i.e., the traditional content aggregator. When the industry achieves disintermediation, content creators no longer need to be big producers to get into the distribution channel. For example, a small Hollywood production outfit could distribute a movie directly to consumers using the Internet and local broadband access. The direct-to-consumer approach would allow content owners more control over distribution at a lower cost. Furthermore, consumers would have an unlimited number of choices. The new streaming media outlets have the potential to circumvent the traditional and restrictive distribution networks. It is undeniable that the trend is toward disintermediation—and streaming services offered through CDNs move the industry in that direction. It is uncertain how rapidly the rest of the industry will follow.

1.2 Streaming Media Overview

The streaming service delivery model is illustrated in Figure I-1.

Figure I-1 Streaming Service Taxonomy



Service providers offer some or all of the technologies required to complete the functional processes illustrated in the diagram:

- encoding;
- digital rights management (DRM);
- content hosting;
- delivery services; and
- performance measurement.

In this report, these services are referred to as *network-derived* revenues. They exclude the price and cost of the content. The Network-derived revenues may accrue to either:

- traditional CDNs for streams over the Internet;
- telcos that deploy IPTV networks; or
- wireless providers who offer streaming on their handsets.

Streaming media *content derived revenues* are analyzed separately.

Encoding is at the technological heart of streaming media. Rich media can be broadcast or streamed much more efficiently across networks if the content is encoded or compressed. Encoders apply compression algorithms to the information, taking into account the desired output quality and available bandwidth. A new generation of desktop media players (Windows Media Player, Quick Time, Real Player and Flash) continues to advance the capability and quality of the video streams. After the encoded information has traversed the network, it must be reconstituted by a player, which is an application resident on the end-user's device. The leading software encoders include:

- Macromedia Flash (latest release 8);
- Microsoft's Windows Media (latest release 10);
- Apple's QuickTime (latest release 7); and
- Real Networks' Real Player and RealPlayer Plus.

Some of these encoding schemes play multiple formats, but they can not be considered standardized because they are owned or controlled by a for-profit entity. Indeed many in the industry feel that the lack of an open standard has slowed adoption of the technology, though there is little indication at this point that the current major industry players will voluntarily adopt a standard.

Another key technology in streaming media is digital rights management (DRM). DRM refers to the ability of creators and content owners to control or manage the intellectual property rights of digital content—although it is most often used more narrowly to define a specific technique that allows the content distributor to control access to content and protect it from illegal distribution. DRM technology has evolved to a point at which it is no longer the factor holding back the proliferation of broadband content; rather, content owners have embraced the concept and developed new business models to drive revenue from mass markets.

Other technologies required in streaming media are content hosting, caching, routing, and performance monitoring. These technologies have evolved to a more mature state from which they can readily support current and future growth in the streaming media industry.

1.3 Streaming Media Market Outlook and Forecast

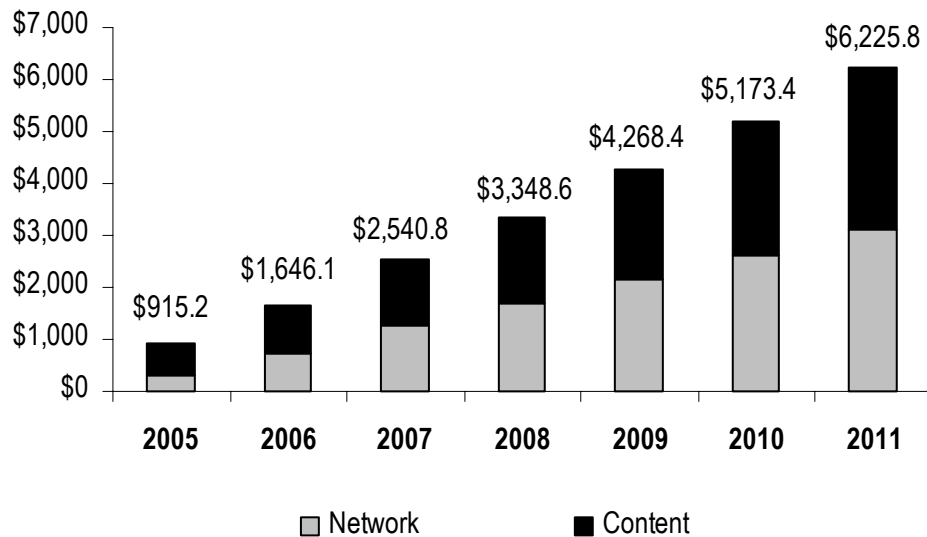
The outlook for streaming media has never been brighter. INSIGHT Research expects robust growth in both the enterprise and consumer markets. The enterprise market has always been willing to pay for enhancing communication and productivity. For these customers, streamed media is an advanced tool that can be used to create communications and marketing solutions. Demand for streaming media from enterprises will be brisk.

A more exciting and more lucrative opportunity exists in consumer markets. The consumer desire for content on-demand (anything, anytime, and anywhere) can now be satisfied. As more content becomes available, the consumer desire for on demand content is likely to increase.

We have already witnessed carrier plans to invest in networks in order to deliver streaming media. Several major telcos have announced plans to deploy high-speed access networks using fiber or DSL technology. Furthermore, these networks are designed to deliver the triple play—telephony services, broadband Internet, and video. Similarly, most major wireless providers are using 3G investments to offer streaming audio and video services. Pure play CDNs are growing faster than ever.

Currently, INSIGHT would characterize the US streaming media market as being in a growth phase—a market experiencing realistic and sustainable growth. The forecasts that we present are conservative, and in line with current performance. Several market drivers, however, could significantly alter the landscape and propel this industry into explosive growth. Based on revenues derived from both network (enabling) and content (provisioning) services, INSIGHT’s research suggests that the total US streaming media market will grow at a compounded rate of 38 percent from about \$900 million in 2005 to more than \$6 billion in 2011, as shown in Figure I-2.

Figure I-2 US Total Streaming Media Market, 2005-2011 (\$Millions)



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