

STRATEGIC WHITE PAPER



Enabling Digital Media Content Delivery

Emerging Opportunities for Network Service Providers

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Abstract

The surge in consumer demand for high-quality multimedia entertainment delivered over IP networks to television, personal computers and mobile devices is having a profound impact on the network infrastructures and established business models.

Provision of high-performance content delivery and premium multimedia services are untapped opportunities for network service providers to leverage their strategic network assets and subscriber relationships and to break away from their current path towards broadband service commoditization, costly capacity upgrades and continued margin erosion.

This paper discusses how network service providers can leverage and enhance their strategic network infrastructure assets to enter the premium digital content delivery value chain.

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1 Introduction

We live in a digital world that communicates, educates and entertains through digital media. Internet TV is already changing the way we watch television programming and movies, with on-demand services increasingly competing with traditional linear broadcast programming for our viewing hours.

The Internet has become a global delivery medium for all types of video content – from user-generated content through catch-up TV shows to movies-on-demand. Consumers are not just watching video over the Internet; they are seamlessly weaving content into their social networking activities through reviews, recommendations and reference links.

Today, video services are driving exponential growth in Internet traffic volumes. It is easy to see why, considering a single DVD movie is roughly equivalent to 1000 MP3 file downloads or 100,000 web page views. Having initially accepted low-quality small-screen videos, the public now expects TV quality content without delay. With HD raising further their expectations, the big question is will the Internet be able to cope as audiences and video encoding rates increase.

The growth in digital media consumption and resulting IP traffic presents significant economic and performance challenges for network service providers, whether ISPs, telcos or cable operators. As digital media become the primary driver for service demand and network utilization, this will inevitably impact existing business models. Content delivery has become the de-facto core business and a critical success factor for network service providers, whether they realize it or not! The question is how to turn these trends into new revenue streams and sustainable growth.

The Internet was not designed to meet these needs and has a lot of catching up to do. Ten years ago, the Internet was predominantly text-based with a few low-resolution images here and there; video was nowhere in sight. Fast-forward to today, and our Internet experience is vastly different.

The problem is that continuing to use bandwidth in traditional terms is not going to work. Dropped streams, poor performance and constant buffering will all become an inherent (and unwelcome) part of the online viewing experience - fairly annoying if you are watching the climax of a car chase in 24 - and consumers will, most likely, simply switch off.

To get from where we are to where we need to be, there are two significant problems to solve. Firstly, fault-lines run through the Internet economy today with financial flows not appropriately compensating those with a crucial role to play in delivering video online. Secondly, with the Internet traffic growth rates being witnessed today, we are racing headlong towards the inherent limitations of existing Internet infrastructure.

Back in the early days of television, physical national broadcast networks were built-out. This included the installation of regional broadcast transmitters in close proximity to viewer homes to ensure they received high-quality TV reception. The Internet needs to go through a similar phase of evolution to be able to deliver high-quality video to the masses.

The Internet was designed to provide relatively short duration connections for delivery of web pages. If a page fails to load properly, it is an inconvenience, but clicking the refresh button usually fixes the problem. For video however, long duration connections are required, lasting anywhere from a few minutes to several hours. 30 minutes into a video, clicking refresh to re-start the video again is more than an inconvenience... It is unacceptable. Bandwidth consistency is also needed for video, rather than the choppy bandwidth that many of us experience when browsing from our homes today. How well would TV sets work if the electrical supply varied wildly throughout the day depending on national demand, as is currently the case with the bandwidth available on broadband connections?

For an answer to these economic and performance challenges, Velocix has developed a solution for network service that provides them with their own advanced digital delivery capability. The aim of this new initiative is to fix the economics of the video delivery value chain, while also providing significant improvements in online video delivery performance.

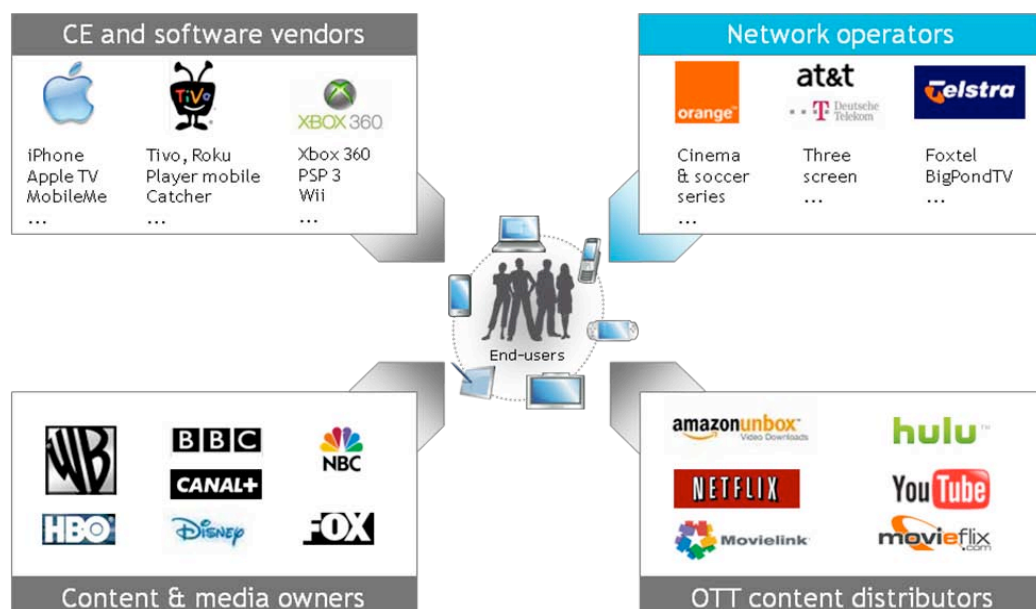
In many ways, what Velocix has set out to do parallels the build-out of traditional TV broadcast networks many years ago. Velocix is working with major network service providers to deploy video delivery 'transmitters' deep within their networks and in close proximity to consumer homes.

2 Threats and opportunities for service providers

All major studios, broadcasters, entertainment players and many well-funded startups are gaining momentum in the digital media space. The battle for viewers is heating up and is fought on multiple screens by multiple contenders (Figure 1). The challenge for network service providers is that these services are delivered over-the-top of their networks, and so represent increasing traffic and cost with no incremental revenue stream. Over-the-top premium content services are proliferating primarily from the following areas:

- Providers of consumer electronics and entertainment gear, such as game consoles, set-top boxes, portable broadband enabled devices, etc. already provide bundled Internet video services.
- Broadcasters and studios are making their free-to-air programming available via Internet Catch-Up TV services. There are also some early examples of integration across delivery channels where customers are given access online to the same set of premium content services that they subscribe to with their cable/satellite TV service. Sky in the UK offer this and the TV Everywhere initiative led by Comcast and Time Warner aims to achieve the same in the US.
- Digital media retailers such as Apple, Amazon, Netflix and Blockbuster have all gone online with many others following in their footsteps. YouTube has recently developed initiatives towards distributing commercially-produced content, having inked deals in the UK with Channel 4 and Five.

Figure 1. Consumer retail relationships for digital content services



There is already considerable interest and activity among network service providers to offer premium multimedia content services. Many already have experience with IPTV, offering linear programming together with a limited on-demand selection to their subscribers.

2.1 Potential threats from over-the-top content providers

The fundamental threats and challenges that network service providers face from over-the-top content services are the following:

- Escalating cost from transporting over-the-top video traffic without associated revenues, as subscribers in most cases pay a flat-rate network access fee, independent of usage.
- Potential disintermediation from subscriber base as over-the-top vendors enter into direct selling relationships with consumers.
- Diminishing value and increased commoditization of basic network access services, as the true end-user value shifts further from connectivity to content. Over-the-top content providers are in fact competing with the network service provider for the same spend on digital content services.

In essence, network service providers are bypassed in terms of revenues in the over-the-top delivery model, although they in fact carry a large part of the delivery cost. This delivery cost is high, as content needs to be fetched from its source for each individual request. As a result of “bypassing the network service provider” however, the over-the-top model itself faces inherent weaknesses:

- The over-the-top service is unable to provide quality guarantees, as they have no control over the quality of service provided by the networks that carry their services to the consumer. At peak viewing times, delivery quality suffers due to the sheer volume of traffic and bandwidth contention. This prevents a lot of the inherent value of the content to be monetized and results in a stop-start viewing experience for the consumer.
- Subscriber acquisition cost. Over-the-top providers need to spend heavily on subscriber acquisition and face prolonged pay-back periods. Leading over-the-top content provider Netflix for example reported a cost of \$26.86 per gross subscriber addition for the third quarter of 2009. Their net revenue was \$30.1 million derived from 10,835,000 paid subscribers, which amounts to a net profit of \$2.89 per subscriber per quarter. It takes Netflix about nine quarters (over two years) to recover the subscriber acquisition cost. With a churn of 4.4% per quarter, which is actually fairly low, this is not that easy.
- Sustaining competitive differentiation. It is not hard to replicate the over-the-top content delivery model, and there are already many players in this space, and they basically all have access to the same type of content. Without content or quality being real differentiators, what compels subscribers to pick one over-the-top provider over the other, besides cost?

The landscape of over-the-top content providers is changing daily. Though revenues are still modest, significant amounts have been invested. Partnerships are emerging and collapsing each week as the search for a viable business model continues.

2.2 Potential content delivery opportunities for network service providers

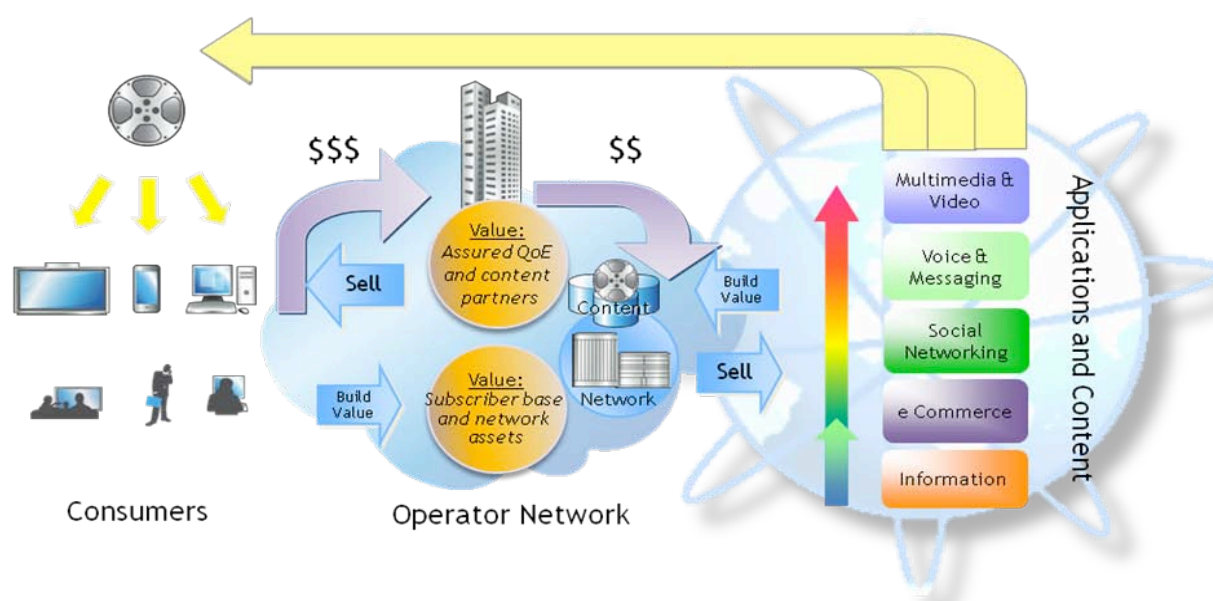
Network service providers face continued substitution and commoditization of their basic service offerings. They do however have some strategic assets that can be leveraged for advantage in the digital content services arena:

Unlike over-the-top content distributors, network service providers own and control the networks that connect consumers to the Internet. This allows them to effectively manage and preserve the quality of content delivery, which is key to monetizing the inherent value of the content itself.

Network service providers already have direct billing relationships with a large subscriber base that they can retail content to. Unlike over-the-top content distributors, they can simply up-sell a content offering to their existing subscriber base, which is far less costly in terms of acquisition costs. Since content providers are not set up for direct retail to consumers, network service providers are a natural partner.

By getting into the business of content retail and delivery, network service providers have the opportunity to provide a missing link in the value chain for premium content delivery.

Figure 2. Leveraging network - and subscriber assets to build a two-sided business model



Content distribution and retail offer network service providers the means to move up the value chain from bit transport to content delivery. Over-the-top delivery of content does not leave the network service provider any option to differentiate and leverage the value of the network. However, if network service providers engage directly with content providers to become content aggregators and retailers, they can fully leverage their networking capabilities and subscriber base to build highly differentiated content offerings and establish a two-sided business model (Figure 2).

Doing so enables a superior quality of experience for consumers, which is key to winning distribution rights from major studios to deliver their premium content and generate associated revenues.

By extending the service bundle with a premium content offering, network service providers not only have the opportunity to generate new revenues, they also stimulate demand for the premium broadband access services needed to deliver this content. This helps combat commoditization and price erosion of basic network services.

In conclusion, network service providers have excellent opportunities to enter the market. Doing so will increase service take-up and brand value, help to build stronger consumer relations, and provide competitive differentiation.

2.3 Digital media delivery and Content Delivery Network (CDN) technology

CDNs are basically caching networks that move popular content closer to the requester to reduce latency.

The traditional application of CDN technology was to accelerate the performance of web sites globally by replicating website content over a geographically distributed network of servers. Akamai is the most well-known CDN services provider. CDNs charge on a dollar-per-GB delivered model, which can vary from more than two US dollars to as low as three to five US cents, based on monthly traffic commitments.

Internet video is a new application and growth market for CDNs, but video has different requirements:

- Unlike typical websites with many small HTML text files and images, video objects can easily reach file sizes of multiple Gigabytes.
- To deliver video content reliably requires sustained bandwidth throughput over prolonged periods of time.
- Video content is typically subject to regional differences due to language barriers and content distribution rights, so deep regional network infrastructures are required, rather than the broad global network deployments of CDN providers.
- Video content may be available in many different formats to accommodate a range of different clients and quality levels.

3 Business models for content delivery

There are a number of different business model options for network service provider content services:

3.1 Retailer

The retail model is the first model and essentially enables the network service provider to become a content retailer that engages directly with content providers to secure distribution rights. This model has the highest profit potential, but also has more operational requirements in terms of establishing a content management and retail operations. Tier 1 full service providers are the most likely to adopt this model.

3.2 Wholesaler

The wholesale model establishes a premium content delivery service for direct use by content providers who publish their content directly to the service provider's network. The network service provider is compensated via a volume-based carriage fee. Profit margins are smaller than with the retail model, but so is the operational overhead. Tier 1 broadband access providers are most likely to pick this service, but it can also be an option used in conjunction with a retail model.

3.3 Broker

The third model is that of a content aggregator and broker. This could be a Tier 1 network service provider or carriers' carrier that aggregates and brokers content rights to Tier 2 and 3 network providers in their region.

3.4 Transporter

The last model is one that improves the efficiency of over-the-top content delivery. Network service providers package, market and deliver web content with premium delivery to subscribers, without a direct relationship with content providers. Transport cost reduction and subscriber acquisition/retention are the primary driver for this mode. This model is well-suited to delivery of user-generated content services.

4 Conclusion

There is great promise: sheer unlimited content choice with a premium quality of experience at an affordable price. For this prospect to become reality, there are major challenges that can only be overcome with the participation of network service providers in an extended value chain for Internet-based content delivery. Network service providers have important assets that they can leverage and contribute: they own a distribution infrastructure and have trusted consumer billing relationships with a broad subscriber base that they can retail content to. Since content owners are typically not set up for retailing, and customer acquisition presents a major cost, collaboration with network service providers in the value chain as content aggregators and retailers provides significant benefit.

Quality and accessibility concerns of consumers need to be addressed in conjunction with required investments in infrastructure to ensure high-quality delivery of content. Even network service providers that already deliver IPTV will need to enhance their infrastructure and operational expertise in order to deliver vast on-demand video catalogs in a scalable and profitable manner to any broadband-enabled device.

Content distributors and service providers need to act swiftly, as the digital economy is moving forward at a rapid pace, and they cannot afford to be left behind. The irony in all of this however is that the solution is to emulate the modern day IP equivalent of the approach that the pioneers of traditional broadcast television adopted to extend the reach of TV services to the masses all those years ago.

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