How Telcos and ISPs Can Learn to Love OTT

Using localized CDNs to profit from improved QoS
Online video consumption is surging, and with it the volume of IP traffic coursing over telco networks. The traffic volumes—already immense—will swell significantly in the next few years. Consider:

- Video over IP traffic is projected to comprise 79% of all traffic by 2018, up from 66% in 2013.¹
- By 2018 there will be 21 billion networked devices and connections globally, up from 12 billion in 2013.¹

The rapid growth of online video has created a vicious cycle for telcos and ISPs, however. Accommodating the insatiable consumer appetite for more and better quality online video requires enormous network infrastructure investments.

Broadband subscription revenue alone won't be nearly enough to recoup these expenditures, however. The pressure is on telcos, therefore, to establish new business models and revenue streams that reshape today's vicious cycle into a virtuous cycle. One such opportunity is for network operators to launch content delivery networks (CDNs) and exploit some of the inherent advantages that they have over traditional CDNs.

With this white paper we will demonstrate how it is now possible for telcos to improve their position in the content-to-consumer value chain, create a more sustainable business model to value chain members and profit from escalating over-the-top (OTT) video traffic.

¹ Cisco UNI
Problem
The rapid growth and increasing popularity of over-the-top video puts telcos and ISPs in danger of being trapped in a vicious cycle of investing increasingly more in broadband infrastructure with no obvious reward beyond upgraded broadband subscriptions — which are themselves subject to price competition.

Homes that once housed a single PC now have a mixture of laptops, tablet devices and smartphones competing for the same bandwidth. Meanwhile, the reliability of the video delivery becomes more important as the length of the sessions increase and as the screens get larger; a trend that will accelerate with the penetration of connected TVs.

To maintain customer loyalty — especially within the younger, more Internet-centric generation — telcos and ISPs have no choice but to embrace online video services. But how do they make a viable business out of it and still meet consumer demand for ever increasing service quality for broadband entertainment offerings?

The surge in online media consumption has created problems for content providers too. While they already pay for improved quality of service (QoS) through traditional CDNs, they fall short of their quest to make broadband a viable TV business because of:

• **Unpredictable quality**: Existing cable and satellite pay-TV services have set the bar high, conditioning consumers to expect an uninterrupted stream of HD programming. Content providers using incumbent CDNs for OTT services have not been able to replicate that kind of dependable, high quality viewing experience online, however, which has limited their appeal.

• **Blind spots**: Online content has traditionally been delivered to the edge of an ISP network, with the “last mile” of the content’s journey delivered over-the-top with no guarantees on the quality of service. This leaves content owners in the dark about the actual QoS levels delivered to the end user. In order to effectively monetize online video, content providers will need to be able to provide assured quality all the way to the end user.

• **Scalability issues**: For broadcasters, the online video opportunity is great. However, the current Internet infrastructure is not geared for this expansion. To be successful, content owners must be able to offer continuous access even at peak times, especially for live TV.

• **Low expectations**: Internet video has swelled in popularity because it is available on-demand across multiple screens, not because it is of high quality. To make a dent in the pay-TV market, OTT providers will need to raise quality expectations for online video, then deliver on them.

Compounding the overall problem, content owners and ISPs have long viewed each other as adversaries and, as such, there has not been a commercial model that makes sense and is sustainable for both parties.

Solution
The OTT threat for telcos can be recast as an opportunity because they have what content owners need: the ability to support greater scale and improved quality of service for online media. Telcos have inherent advantages to provide tangible value and improve their position in the content-to-consumer value chain. These advantages are:
• **Deep Network Caching**: The ability to cache video deep in their networks and deliver it much closer to the end user. Telcos control the all-important “last mile” and can ensure that content is not exposed to the vagaries of “best-effort” delivery. By caching video at the point where video is served they can avoid upstream points of contention and reduce latency. That means a better user experience is inherent even without specific service assurance. The bottom line is faster content delivery and improved video quality of experience (QoE).

![Last Mile](image)

• **Network Intelligence**: The ability to route traffic more efficiently based on network intelligence gathered much closer to end users.

• **Private Network**: The means to more securely deliver online video because the transit is over a localized CDN’s private network, avoiding the Internet altogether.

• **Home Market Relationships**: Strong relationships with ISPs and content owners in their home markets. Courtesy of their IPTV offerings, many have in-house content expertise. Some are already extending these content relationships to the online world as they replicate their private network IPTV offer for personal computers, smart phones and other devices. Telcos are also involved in the development of connected TV platforms and stand-alone connected TV offers with their own set-top box devices, so building the additional broadband infrastructure needed to propel these services is a natural evolution.

• **Pent Up Demand**: A pool of content owners that are willing to pay for improved QoS for over-the-top video.

Content owners, in turn, are likely to support the Telco CDN approach because:

• They can expand their content offering by using the Internet to deliver more live, linear programming and on-demand services. This will help them extend their reach and boost viewer engagement, which are key metrics for every broadcaster. Important benefits will include reaching multiple screens in the home and helping viewers see content they would otherwise have missed in catch-up mode.

• They can finally provide advertisers with guaranteed picture quality that maintains the integrity of both the advertising and editorial content. This is a must because advertisers will not tolerate buffering and other glitches that degrade viewer engagement.

• They can generate a larger subscriber base by virtue of being able to guarantee high quality, uninterrupted programming.

• They can deliver a streaming alternative to DVD rental or Pay TV VOD, which is increasingly the preferred delivery option for consumers, even for on-demand content.
The Wholesale CDN Model

Network operators can now deploy advanced, video-centric CDN infrastructure that finally enables reliable, high quality delivery of video over IP to any computer, TV or mobile device. Telcos can build local content delivery infrastructure and wholesale CDN solutions that ISPs can, in turn, resell (B2B2C model.)

The key for this model to succeed is not just the provision of sophisticated CDN services but the creation of a strong value proposition for broadcasters who need to manage the user experience for their OTT services. In doing so, telcos can turn the threat posed by over-the-top content into an opportunity; creating a new commercial model that is sustainable for all parties.

Fundamental to capitalizing on this OTT opportunity is establishing premium quality of service. By greatly improving the QoS for over-the-top content, media owners can start to monetize their content more easily. For example, consumers may be willing to pay for video once it can be delivered in genuine HD quality and without interruptions, especially if it is being routed to a television screen via one of the many connected TV devices now penetrating the market.

Telcos can provide QoS assurances as never before because they can measure and manage every aspect of content delivery performance using Citrix Content Delivery Analytics™. Citrix Content Delivery Analytics analytics and reporting solution provides Telco CDNs — including BT, Rostelecom, Telecom, Italia, and Telstra — with visibility into essential operational metrics like traffic distribution and volume, capacity utilization and the billing trends and bandwidth consumption of their customers. These measurements allow Telco CDNs to:

- Isolate and correct service quality issues
- Forecast traffic and provision capacity
- Justify pricing and ensure accurate billing

An essential component in making the B2B2C model work is the ability for the CDN to give each ISP a view of their network performance across all their content customers and, in addition, offer content owners a view of their activity across all ISPs. This wholesale level of virtualization is only available with Citrix Content Delivery Analytics analytics and reporting.
Business Benefits of Wholesale Telco CDNs

The whole supply chain for online media can be made more efficient by broadcasters and ISPs collaborating around a joint commercial model, helping to move the market forward.

The wholesale CDN approach works because ISPs can purchase the CDN services and, in turn, sell an optimized video experience to online content providers — including broadcasters with catch-up TV services. The platform also helps ISPs manage their network traffic.

There is also a strong value proposition for broadcasters who need to manage the user experience for their OTT services. They benefit from:

• The provision of video content — including live TV — with an assured level of service all the way to the viewer.
• Rich usage data that becomes available when collaborating with ISPs.
• QoE that is directly linked to monetization opportunities in the form of advertising, subscription and Pay Per View revenues. In fact, research indicates that viewers whose QoE is diminished by video rebuffering click away over 81% of the time rather than wait for the content to load (source: TubeMogul).

A real-world scenario of how a wholesale CDN can use Citrix Content Delivery Analytics might look like this:

To keep QoS levels high, the Telco CDN monitors the incidence of error codes over time through the Requests by Status Code KPI, paying particular attention to red flags like the dreaded “404 Not Found” and “408 Request Timeout” errors.

By hovering over individual bars in the graph, it can view the numbers and percentages that each represents.
To drill down and further isolate the problem, it can click on each of the bars in the graph and generate a new dialog box that displays requests by customer, edge location, country or ISP.

In reviewing the data, the service provider is particularly concerned with the incidence of 404 errors emanating from a particular ISP — both in terms of the total number of errors and the percentage that they represent.

To uncover the source of the problem further, it clicks on the bar for the ISP in question and discovers that a significant number of 404 errors originate from a single content provider.
After identifying this problem, the Telco CDN switches to the “Show by Customer” view and drills down to see if the problems are coming largely from a particular content asset and then makes sure that the asset is being handled properly within the end-to-end process of making it available on the content delivery network.

Only by drilling down to get a multi-dimensional view does the service provider gain the insight necessary to maintain premium QoS levels.

**Conclusion**

Online video consumption is ballooning, as viewers increasingly turn to over the top content delivered across a host of devices.

This surge in online video has created a vicious cycle for telcos and ISPs, however, as they struggle to find new revenue streams that can offset the huge network infrastructure investments necessary to keep pace with OTT bandwidth demands.

To recast OTT content from a threat to an opportunity, telcos are increasing launching wholesale CDN services, which enable those in the digital media value chain to more equitably profit from the escalating consumption of online video.

Central to making this model work is the ability for Telco CDNs to give each ISP and content owner with a complete and comprehensive view of their activity across the entire network. Only Citrix Content Delivery Analytics and reporting solution can provide this capability. Plus, Citrix allows service providers to measure QoS in such rich detail that they can provide guaranteed levels of video quality and, in turn, enable IPTV services to compete with established pay TV providers.

To learn more about Citrix® and how we can help make your Telco CDN initiative a success, contact our sales team at 800 424 8749 or sales@citrix.com.
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CDN Federation: What Every Service Provider Should Know
With this white paper, we will reveal how it is now possible to establish a central reporting repository that gathers data across all content owners and federation members, while also providing secure, private views of data relevant only to each participant – and how such an analytical hub can drive the success of a CDN federation.

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