The 4 Keys to Telco CDN Success
Until recently, telecommunications service providers could operate profitably by nurturing legacy businesses and harvesting new revenues from locked-in customers. Today, however, societal and technological changes have caught these companies in a cost-revenue squeeze.

Deregulation and competitive access. Time and place shifting. The ubiquity of mobile phones. Voice-over-Internet.

All have had a profound effect on network operators and caused significant harm to once reliable revenue streams; none so ominous as the threat that customers will cut the cord and sever their telco relationships entirely.

As traditional revenue streams ebb, telcos and other Internet Service Providers (ISPs) also face a huge challenge on the cost side. With online video traffic poised to more than quadruple by 2013, service providers will need to accommodate massive “over the top” (OTT) demand on their networks. But ISP subscriber revenue will not be sufficient to offset the investment levels necessary to grow bandwidth that quickly.

The combined effect of major cost impacts and shrinking revenues is a major challenge to profitability.

Telcos are not sitting idly by, however. They are pursuing new strategies that play on their inherent strengths — ownership of the network infrastructure and direct relationships with end users and content owners — to reduce capacity investments and create new revenue streams. One area in which telcos are leveraging these strengths is online video content delivery.

Built-in factors like those below give telcos a natural competitive advantage over pure-play commercial CDNs:

- Better video quality of experience
- Lower cost structure
- Ability to leverage unique business models

But having built-in advantages and fully capitalizing on them are two different things. With this white paper, we will reveal four key success factors necessary for Telco CDNs to effectively harness their competitive edge and realize success.

Optimize Quality of Service

Peek into most households these days and you’ll see a revolution in process. A radical transformation in which viewers of broadcast content are no longer bound by traditional TV physics. Instead they are free to view what they want, when they want, where they want, across a multitude of devices.
But for this revolution to fully take hold — for viewers to actually take advantage of all this newfound freedom — the delivered content must be of the highest quality. In a world increasingly accustomed to an uninterrupted flow of HD programming, nothing short of that will do.

Low resolution and other quality issues might be forgiven by people watching short video clips on their desktops, but not by audiences considering internet video as a replacement for cable or satellite TV services.

Such is the challenge for OTT and IPTV content providers. If they are to successfully compete with established pay-TV offerings, they must deliver a consistently reliable, high quality viewing experience.

To narrow the quality gap will require that OTT and IPTV content be cached and delivered as close to the end user as possible. This minimizes the distance that video data travels over the general internet and delivers it more quickly and reliably.

Traditional “pure play” CDNs have difficulty getting the content close enough to the end user because they only deliver to the edge of an ISP network. The final stage of the content’s journey is then delivered over-the-top, with no guarantees on its quality of service (QoS).

Telco CDNs, on the other hand, own the network and the entire "last mile" — the final leg that video content travels on its way to the end user. This enables the telco to cache content deep in its network, avoiding congested upstream areas of its network or the internet at large. So, most last mile delays and disruptions are eliminated. This “deep caching” creates an important inherent advantage for telcos competing in the CDN space.

To fully capitalize on these inherent advantages, though, Telco CDNs must focus on maintaining QoS and eliminating any service irregularities that might compromise it.

This demands an ability to quickly isolate and correct service quality issues at a very granular level. They need to be able to quickly answer critical questions such as:

- What content assets are we having difficulty serving?
- Which geographical areas are experiencing suboptimal quality?
- Which POPs in our network are producing the most delivery problems?

In fact, the real questions that need answering will represent a compounding of the questions posed above. For example, which POPs are having trouble delivering specific content to specific geographical areas? Only this level of specificity will allow the network operator to quickly and precisely identify the sources of quality problems.

Failure to mind these issues at this level of detail may result in squandering the telco’s inherent advantage. As a result, despite a telco’s “head start,” it may end up offering inferior QoS than the off-network competition.
Fortunately, the Citrix® Insight for Content Delivery Networks reporting & analytics solution enables Telco CDNs to drill down across multiple dimensions simultaneously — by customer, edge location, geography, etc. — to swiftly answer these types of questions and uncover the root cause behind service quality issues.

Maintain Cost Advantage
By virtue of owning the underlying network transit, Telco CDNs have a built-in cost advantage over traditional CDNs, which must lease bandwidth from network operators and build the operator’s margin into their own cost structures.

To maintain their cost advantage, however, Telco CDNs must optimize the efficiency of their networks, with an emphasis on capacity planning and capacity management. Otherwise, a third-party CDN that runs a tight ship can easily make up for the margin advantages and end up offering a superior cost structure.

Capacity Planning
Optimal capacity provisioning requires a deep understanding of demand trends; not just average demand but peaks as well. To identify peak capacity, in turn, requires an ability to drill down to very fine levels of time granularity. It also calls for an understanding of traffic broken out by dimensions such as:

- Geography
- Edge location
- Media format

Only by viewing demand trends in this detailed, multidimensional way can one go beyond the basics — understanding how much capacity to add to the network as a whole — to understand more complex needs such as:

- How many POPs to deploy
- Where to locate them
- How much capacity to provision at each POP
- How much capacity to allocate to different media formats or services

For example, simply taking a one-dimensional look at the traffic through a specific POP may give the impression that its traffic is growing and that capacity should be added. Overlaying the POP dimension with the geographical dimension, however, may show that traffic increases at this POP are actually the result of load-balancing from other POPs that have reached their capacity limits.

The multidimensional approach allows you to see beneath the surface and expose the underlying truth – that it is really those other POPs that need increased capacity.
**Capacity Management**

Capacity management requires deep insight into traffic patterns and network topology. By understanding this data at a very atomic level, CDN operators can actually shape their traffic profiles and manage peak loads via strategies like:

- Demand driven routing / load balancing  
- Dynamic Pricing  
- Access controls

In essence, these are all different ways of controlling which users can retrieve which content from which POPs at which times.

The control mechanism may just involve routing selected traffic to different POPs in order to avoid congestion at peak times. Network operators with end-to-end control of the video supply chain – telcos that run their own IPTV services — may have more creative options at their disposal. For instance, they can “shave” peaks by blocking access to hot content by non-subscribers or by charging more to view it at peak times.

Properly managing these methods requires a deep understanding of demand trends across geographical areas, POPs, customer types and content categories. This understanding can only be achieved with tools that provide granular and multidimensional views into operational data.

In summary, optimal provisioning and management of capacity require Telco CDNs to measure operational performance in a multidimensional way. Only then can they precisely forecast demand, shape traffic, and optimize their network topology.

Citrix Insight for CDNs makes it possible for Telco CDNs to do just that, enabling them to track essential volume measures by time, edge location, ISP, geography, media format, and a multitude of other dimensions.

**Contribute to Customer Success**

To make their bet on content delivery pay out, Telco CDNs must ultimately contribute to the success of their content owner customers; many of whom first established themselves as print and broadcast properties and are now struggling to create viable digital media businesses.

To help content owners to navigate the uncharted waters of Internet video, Telco CDNs must provide them with tools to optimize their content portfolios and answer essential questions such as:

- What types of content do viewers prefer?  
- Which content should be promoted in featured playlists or social media?  
- Which encodings, bitrates, and formats should be produced for mobile, desktop, and big-screen viewing?

Citrix Insight for CDNs enables Telco CDNs to become true partners and trusted advisors to their customers by allowing them to answer questions crucial to their business.
Establish New Business Models
Telco CDNs also have the opportunity to create more sustainable business models that more equitably benefit key links in the content-to-consumer value chain. BT Wholesale’s “Content Connect” and its B2B2C business model appear to be a bellwether in this regard.

By guaranteeing HD-like quality of service, BT offers ISPs and OTT content owners with a viable opportunity to create a user experience for which they can charge a fee.

But the success of these evolving business models also hinges on the ability of participants in the value chain to access and track data relevant to managing their business. BT can’t just claim to offer better QoS to subscribers of its premium level service; they must prove it.

With Citrix, network operators can create secure portals for customers and business partners, providing them access to data specific to their own operations. The inherent multi-dimensional nature of Citrix’s reports allows:

- Content owners to understand content consumption across all networks or ISPs
- Resellers (ISPs) to understand traffic patterns across all content owners
- All entities to understand how traffic and QoS vary across service levels

Conclusion
Telco CDNs have several advantages over traditional CDNs in helping OTT and IPTV providers to deliver a genuinely competitive pay-TV service. Among these advantages are:

- Deeper network caching and last mile delivery that enable them to guarantee better quality of service.
- Built-in cost advantages by virtue of owning the network and not having to lease bandwidth.
- Close customer relationships that can be further strengthened by providing them with the tools to better understand and manage their content portfolios.

Success for Telco CDNs ultimately rests on their ability to capitalize on these advantages, however, which requires that they be able to measure and manage their network performance at a very detailed level and make adjustments accordingly.

Only Citrix Insight for CDNs can make that happen quickly and reliably because:

- It is able to provide multidimensional views of streaming data at a very detailed level.
- It is highly configurable and extensible, to accommodate new business models.
- It is built on top of Citrix’s patented architecture, which can process huge volumes of high velocity data and turn it into useful reports in less than an hour.
- It is battle tested. Citrix has been in the CDN trenches for years, gathering requirements from over 30 of the world’s leading telco and digital media companies.

Along the way, we’ve come to know exactly what content delivery providers need — especially emerging Telco CDNs. Which is why Citrix is used by the likes of British Telecom, Telecom Argentina, Telecom Italia, Telefonica and Telstra.
White Paper

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