

Don't let OTT and IoT drag down your QoE

Communication service providers (CSPs) in Latin America and throughout the world have a large hurdle in front of them. This hurdle is continuously growing upwards and shows no sign of slowing down. The culprit? Bandwidth cannibalisation — or in layman's terms, the over-consumption of monthly bandwidth allotments, warns Stephane Bourque, president and CEO, Incognito Software.



Figure 1 - The rise in bandwidth usage isn't specific to one region. Worldwide rates have never been higher, and have continued to climb.

Annual global IP traffic is expected to pass the zettabyte (1000 exabytes) threshold by the end of 2016, and reach the 2 zettabyte mark by 2019¹. This immense volume of data consumption is being brought on by a number of different sources, with two of the major contributors being:

Over-the-top (OTT) content providers:

On-demand streaming services have quickly become the preferred multimedia choice for millions of subscribers across the globe. While the OTT video services market is still in its infancy in many Latin American regions, many subscribers have already started cutting off traditional television services in favour of OTT video-on-demand (VOD) services such as América Móvil's ClaroVideo and Vivendi². In addition, OTT video-streaming giant Netflix is now aggressively expanding in the region, doubling their share of peak downstream traffic over the last four years³. With an average of 3GB bandwidth consumed for one hour of HD video, plus a potential subscriber base well over 5-million strong in Latin America, it doesn't take a maths genius to see the impact that

video-streaming services could have on increasing the region's overall bandwidth cannibalisation practices.

The Internet of Things (IoT):

The surge of IP-connected devices has already begun throughout the world, and as with bandwidth cannibalisation, it shows no signs of slowing down.

Gartner research expects 4.9 billion connected 'things' to be used worldwide in 2015⁴, and estimates that number to reach 25 billion 'things' by the year 2020⁵. While this trend hasn't become overwhelming in the LATAM region yet, these statistics don't just impact CSPs and subscribers, they impact the entire population. Soon, everyday items such as refrigerators, toothbrushes, coffee tables, mirrors, beds, dishwashers, and even more will all be assigned an IP address (IPv6 address to be more accurate), and will begin consuming data in immense volumes. On top of that, IP-connected security systems and cameras have reached the marketplace and are gaining popularity throughout Latin America. As these IP-enabled innovations continually release for public purchase, we're likely to see a snowballing effect of new companies and inventors pushing out whatever they can in an attempt to get their piece of the Internet-enabled money pie.

In 2014, South and Central American Internet penetration rates rose higher than the world average⁶, and this growth has continued. As services throughout LATAM expand rapidly, bandwidth utilisation has risen right alongside. As a result, CSPs in the region are



Figure 2 - The Organisation for Economic Co-operation and Development (OECD) predicts that a family of four will have 50 connected devices by 2022

now dealing with heavy amounts of network congestion, and this translates into negative quality of experience (QoE) impacts on existing subscribers. In order to compensate for these impacts, many providers are forced to over-invest in their network infrastructure, which is an impractical way to temporarily bandage a bigger issue.

The cost of network upkeep paired with a tendency to overestimate actual bandwidth requirements leaves many operators with underutilised resources taking up space in their infrastructure plants. At the same time, many operators don't know what upgrades are required, and when the right time to upgrade is. This problem creates more bandwidth shortages and increases network congestion for end-users. In addition, service theft and fraud management has become a much greater problem than providers had ever hoped to deal with. Many providers don't know how to detect and stop fraud from happening. This not only impacts a provider's bottom line, it also hinders an operator's ability to accurately track and manage the issue of bandwidth cannibalisation.

There are a few different ways that providers have tried to deal with these issues. Some elect to use data caps. When data caps are reached by heavy bandwidth-users, a provider can decide whether they want to charge that user for any additional usage, or trigger service throttling policies that temporarily slow down services during peak-usage periods. While this does help reduce network congestion from over-usage, it can easily upset subscribers and hurt a provider's plans to scale their operations.

Other providers have tried the technique of upselling their subscribers from lower service classes into higher ones after a subscriber surpasses their bandwidth usage limit on a consistent basis. This method might help increase revenue to the provider in the short-term, but even this way, providers aren't actually matching their subscriber's behaviours to their plans. Employing rigid plans can also

be limiting for any subscriber who may want more or less data than what is offered.

Another method used to combat the rise in data cannibalisation is usage-based billing. By tracking exactly how much data a subscriber is consuming each month, and charging them on a metered-style billing plan — such as commodity providers selling gas, water, and electricity — operators can alleviate some of the congestion caused by over-consumption while also monetising usage increases. Usage-based billing is also a good way to offer services to any subscriber with lower income. Think of it like a pay-as-you-go cell phone plan; the subscriber is given complete control over how often and for how long they use IP services, and can therefore control exactly how much bandwidth they are consuming each billing cycle.

But there's a risk involved. Many subscribers aren't aware of how much data they're consuming on average, and when their monthly bill arrives they tend to react unfavourably to the extra charges. This is what we call bill shock. Just like the risk of roaming charges in the mobile space, no cable television or Internet subscriber wants to open up a bill and find out that they've gone far over their expected usage for that cycle, and now have to reorganise their budget to accommodate for the overage. It's well understood that subscriber retention strategies are becoming increasingly more important than acquisition strategies, so any hindrance to a subscriber's QoE, especially in the form of bill shock, creates a dangerous balancing act for service providers. It's every provider's goal to grow their company, and at the end of the day, subscribers drive the revenue. It's impossible to grow without a happy subscriber base.

So what can providers start doing to ensure growth? Let's start by recapping the issues, and then we can explore a solution:

- Bandwidth cannibalisation is ubiquitous and only expected to continue growing
- Bandwidth cannibalisation results in network congestion and poor QoS
- Over-investment in network infrastructure leaves providers with underutilised resources
- Improper infrastructure investments leave operators with bandwidth shortages while increasing network congestion
- Service theft is becoming more prevalent in LATAM and is difficult to quantify
- Bandwidth caps and service throttling is the norm in the mobile industry but less often seen in fixed access
- Inflexible service package upgrades are not a long-term solution
- Usage-based billing can result in bill shock and might damage subscriber QoE

The underlying issue to all of these problems is that, unfortunately, most providers have a serious lack of network insight. If providers can't extract holistic data from their networks, including insight into individual subscriber

usage habits and bandwidth consumption patterns, then they can't formulate a strategy that works on a per-subscriber basis.

Luckily, software innovators are now enabling providers to dive much deeper into their networks and into their subscriber's device-usage habits. With the advent of new technology, operators can retrieve valuable information in a non-intrusive manner that once eluded them, and then start creating intelligent plans based on actual subscriber usage statistics. This not only solves bandwidth demand issues brought on from cannibalisation practices, it also lets providers differentiate themselves from their competition with agile service packages. Service providers can gauge what bandwidth is required on a regional level and on a per-subscriber basis, helping to alleviate ongoing network congestion problems. In turn, this gives operators the ability to make more accurate and useful predictions when investing in their network infrastructure.



Figure 3 - Funnelling key network insights into a centralised database gives service providers the ability to make smarter network investment decisions and improve their subscribers' QoE

One method for quickly gleaning data from a network is called Internet Protocol Detail Record (IPDR). IPDR data collection is normally seen as an enabler for usage-based billing policies, but in reality, offers much more. On the engineering and planning side, IPDR can help providers:

- Lower network congestion by increasing visibility into where and when network congestion occurs, enabling the activation of key-performance indicators at congestion points that may hinder QoE
- Make smarter capacity planning decisions by trending congestion patterns and growth projections
- Create and implement fair-usage policies that enforce business actions such as temporary speed reductions and throttling for heavy users during peak periods
- Effectively split nodes and understand what scenarios work per region and per subscriber to further reduce network congestion
- Isolate repetitive network offenders that cost operators more than the revenue being provided

- Identify and halt service theft by tracking bandwidth going to and from unclassified or unregistered devices
- Analyse geographic and subscriber-usage trends to gain a more holistic understanding of bandwidth requirements

CSPs are then able to differentiate service packages from their competitors with new strategies. Sales and marketing teams can:

- Deliver the right product to the right customers, identifying which subscribers need what plans, and offering them tailored packages based on their personal behaviours
- Locate premium subscribers in geographic areas that are saturated during specific times of the day, and target those subscribers for upgrades to improve services
- Provide accurate bandwidth allotments to areas that require greater or less consumption during specific times of the day
- Create self-service portals to help subscribers stay on track, providing an enhanced view over what services are being used and how much data is being consumed

The results of gaining and leveraging smarter network data has helped many operators across the world find new ways to reduce and combat the effects of data cannibalisation. As we've already explored, the issue of increased bandwidth consumption is only going to become more and more widespread as time goes on — especially as OTT providers continuously pop up and IoT gains more ground.

The point is, CSPs must create plans that ensure their operations don't fall behind the demand for more data while making strategic infrastructure improvements where and when they are needed most. It all starts with better network insight. Service providers must use all the tools at their disposal to learn about their networks and their subscribers so they can ensure that subscribers get the services they want, at the time they want them, at the quality and speed they're willing to pay for, with the visibility to track them, and the network to support them.

Want to learn how you can fight off data cannibalisation and make strategic network investments? Engage with us at: solutions@incognito.com.

¹http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/VNI_Hyperconnectivity_WP.html

²<http://www.statista.com/statistics/368280/subscribers-ott-vod-provider-latam/>

³<https://gigaom.com/2014/11/20/muy-bien-netflix-more-than-doubles-traffic-share-in-latam/>

⁴<http://www.gartner.com/newsroom/id/2905717>

⁵<http://www.zdnet.com/article/25-billion-connected-devices-by-2020-to-build-the-internet-of-things/>

⁶<http://www.internetworldstats.com/stats2.htm>