

# How a Tier 1 Service Provider in Latin America reduced network latency and improved customer QoE

Ethernet Network Optimization using EtherASSURE™

Today, most mobile traffic (more than 90% in developed markets) is data, and with VoLTE, voice too becomes an instance of data traffic with a need for low latency to avoid issues with customer experience. Other latency sensitive applications such as mobile video will also increase, and between years 2015 and 2020, mobile video will grow from 2 to 23 TB/month (an 11-fold increase) and will account for 75% of total mobile data traffic by 2020 (source: Cisco VNI Mobile 2016). The requirements operators must meet to provide a good subscriber experience become more stringent with the increasing prominence of real-time traffic such as voice and video. Indeed conversational video traffic - such as Apple's FaceTime and Microsoft's Skype and Lync services, requires voice and video clarity with no perceptible delay or packet loss, and is more sensitive to latency issues than streaming services.

As a result, mobile operators need to manage Ethernet backhaul traffic more carefully to drive resource utilization and assure the best customer experience. This translates into the need to manage and monitor Ethernet backhaul as end-to-end traffic flows through the backhaul network, in order to provide operators with visibility into what the actual performance level is, both at different locations within the network, and from the subscriber perspective in terms of QoE.

## Major Customer Challenge

A major tier 1 mobile service provider in Latin America was experiencing customer QoE issues including:

- Dropped customer calls
- Excessive web page load times
- Abnormally slow upload/download speeds
- Overly slow video application performance when downloading or viewing
- Excessive email retrieval times
- The network appears sluggish
- Poor throughput results

The service provider could identify regions with issues but could not gain visibility down to the appropriate cell site level in those regions in order to properly troubleshoot possible issues. The service provider asked Viavi to help them implement a performance management solution to identify and manage these issues.

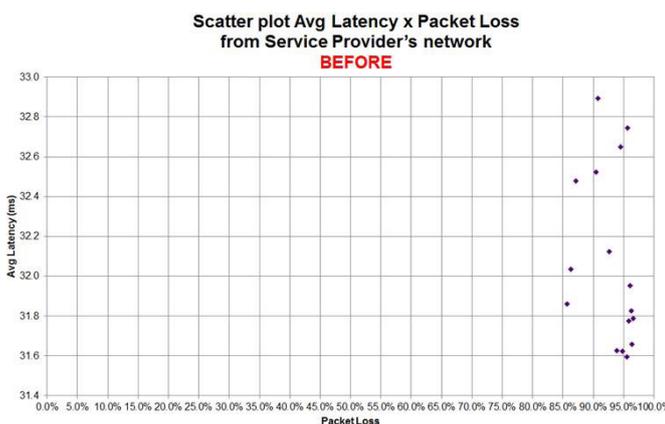
## The Viavi Answer

EtherASSURE is a scalable, vendor-agnostic service assurance solution ideally suited to enable lean and efficient processes for new Ethernet services activation and quality-level performance monitoring. EtherASSURE lets service providers deliver a high level of service quality to match their customers' expectations. It increases subscriber satisfaction and loyalty while reducing operational costs and increasing profits.

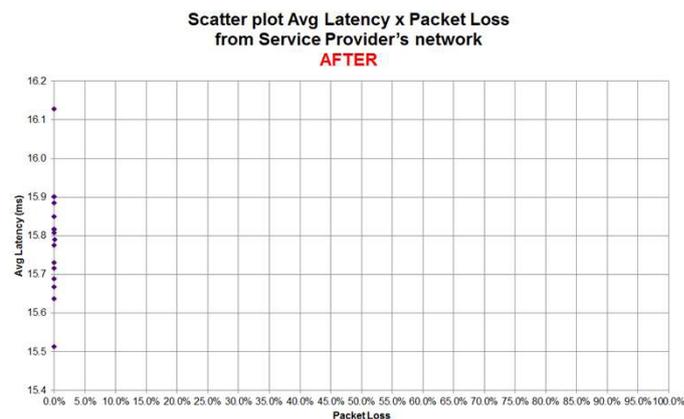
EtherASSURE includes a combination of Viavi Solution software and hardware components and supports third-party, standards-compliant end points/network interface devices (NIDs) or test heads. Additionally, PacketPortal Intelligent Visibility (PPIV) smart SFPs can also be integrated into the solution at intermediate aggregation points to provide segmentation and visibility into the performance of live traffic.

## What We Learned

The service provider implemented EtherASSURE and using the QT-600 Ethernet test head/probe and NetComplete software, a region-by-region analysis of the service provider's network was conducted. The results showed a significant amount of cell site endpoints exhibiting high packet loss and high latency. An example from one of the service provider's regions and results is shown below.



As shown, packet loss is >85% with average latency between ~31 and 33ms. Prior to implementation of EtherASSURE, the service provider could not determine the end-to-end packet loss and latency for services. Now after using EtherASSURE, each individual cell site could quickly be identified and appropriate troubleshooting steps taken. In these instances the service provider was then able to work with each respective cell site to identify and resolve issues such as; misconfiguration of the cell site router or other RAN misconfiguration issues which resulted in greatly improved latency and reduced packet loss as shown below.



As shown, latency has been reduced at these sites to ~15ms with packet loss reduced to ~0% and assurance of customer QoE is maintained at a high level.

## Summary

By implementing EtherASSURE, the service provider was able to identify Ethernet flows and cell sites that were problematic. This enabled the service provider to quickly and efficiently troubleshoot each endpoint to determine what the problem was and quickly resolve the issue.

Going forward the service provider will now also deploy the JMEEP smart SFPs as intelligent Ethernet endpoints to add additional troubleshooting and assurance capabilities and the PPIV smart SFPs at intermediate network hops for troubleshooting using live traffic for segmentation.



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