



Performance Monitoring and Segmentation with Live Network Traffic

A unique visibility solution for improving customer quality of experience and controlling backhaul network costs

Are you overloaded with network performance data but still missing the ability to pinpoint problems? Are you lacking the real-time visibility necessary to determine how live traffic is impacting your network? Can you immediately see the impact of network changes, new subscribers, devices or applications? Do you know when and where to effectively perform network upgrades? With live, traffic-based performance monitoring, Viavi Solutions™ has re-invented Ethernet assurance to help answer these questions and more.

Mobile networks have evolved (with 4G technologies such as LTE) but must still carry legacy 2G and 3G traffic. Data volume and signaling growth mixed with new users, terminals, and applications are generating higher loads and dynamically changing traffic patterns that affect the network and its resources in unique ways. It is paramount to have full visibility into all aspects of network utilization and performance to tackle the negative effects rapid traffic growth can create.

The Viavi live, traffic-based performance monitoring solution with segmentation provides the visibility needed for operators to improve margins and QoE for better customer experience. This industry-leading solution extends the capabilities of traditional performance monitoring and test standards based on synthetic traffic by augmenting the results with measurements based on real-time live customer traffic. This empowers operators with the intelligence necessary to better control their network QoS, backhaul costs, and efficiency with an end-to-end view of monitoring, real-time packet

captures, segmented hop-by-hop performance metrics, and traffic-based views of network and application performance—all based on real customer use and traffic flows.



Unique Benefits and Features

- Remotely perform segmented fault isolation to quickly find the specific problematic path, technology, or vendor
 - Distributed PacketPortal® intelligent visibility (IV) SFPProbes® enable remote, segmented fault isolation, optimizing the use of high-value specialists
- Control costs with targeted network buildouts and decisions
 - Gain insight into real traffic patterns; detect usage, understand flow details, and see micro bursts and peak utilizations
 - Find unexpected, superfluous, or misclassified traffic
 - Use granular real traffic measurement at 1 s and 100 ms intervals for shaping and policing
- Go beyond backhaul and understand signaling spikes that can overwhelm capacity, overload servers, and impact customer experience
 - Use specific filters to understand performance of signaling flows
 - Determine the applications or elements causing bursts
 - Measure using standards-based queue sizes to accurately determine impacts of bursts and peak utilizations below element-provided sample intervals
- Find customer-experience-impacting bursts that are invisible and undersampled when using traditional-standards-based periodic active performance monitoring
 - Pinpoint potential bottleneck and problem areas
 - Ensure system can handle peak traffic loads
 - Plan for dynamic capacity allocations
 - Engineer network to achieve lower latency
 - Determine and optimize bandwidth allocations and backhaul links



Figure 1. Network performance views based on real-time packet captures

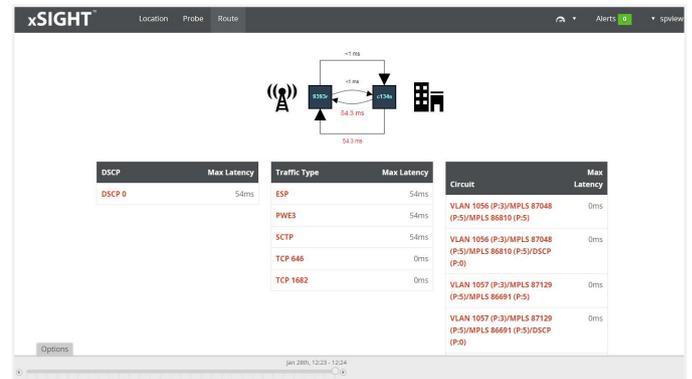


Figure 2. Real-time traffic intelligence for better network QoS

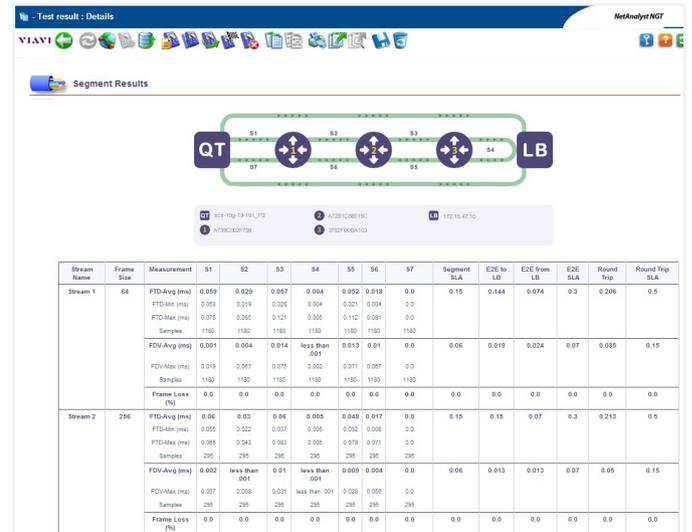


Figure 3. End-to-end monitoring and performance views based on real-time traffic

Better Decision-Making Through Performance Monitoring Using Live Traffic

Traditional service management used to be limited to correlating statistics and measurement data collected from different network elements in the network and standards-based active performance management tools such as two way active measurement protocol (TWAMP) and Y.1731 that use synthetic traffic to characterize the network. Assessing end-to-end service performance requires those traditional service management systems to correlate huge amounts of data in increasingly complex models without a window into actual customer traffic or experience.

Using the live performance monitoring solution, operators can manage backhaul or network performance and upgrades using more accurate, real traffic-based data compared to using statistical models. This more accurate view of actual customer use patterns and traffic distributions, down to the 100 ms level, helps optimize investments and save on or defer OpEx and CapEx decisions.

Live traffic-based performance management augments tools that use synthetic traffic or statistical models, enabling better decision making:

- Pre-defined TWAMP test windows cannot reliably identify transients unless the test windows overlap with network-performance-impacting events or faults
- TWAMP uses a fixed time window sampling, while the Viavi solution uses adaptive sampling based on current live traffic patterns on the network; this leads to more accurate performance characterization
- Analyzing real-time traffic to 100 ms levels drives a better understanding of application distribution, bursts, and traffic patterns, which can't be seen with the 1 to 15 min measurement intervals available on most elements

Take the Guesswork Out of Fault Finding

The convergence of 2G, 3G, and 4G traffic has created more complexity. It is a challenge to maintain differing transport qualities due to the dynamic and bursty nature of 4G traffic mixed with the constant bit rates of traditional circuit-based services. Traditional performance monitoring solutions cannot adequately address or assess these problems. The Viavi solution lets operators proactively monitor for these new issues that can significantly impact customer experience.

Today's performance management systems use sampling methods that make it nearly impossible to find transient problems such as bursty traffic common in modern IP networks carrying 4G traffic. These service-impacting issues can be instantly found with the Viavi solution's ability to provide network and packet level visibility at each hop in the network. For example:

- Isolate problems to a specific segment or element
- Maintain granularity and find bursts by sampling and using dynamically determined rates unlike traditional methods that use fixed time windows
- Get visibility into how bursts impact traffic shaping and policing by measuring utilization down to 1 s or 100 ms intervals

In addition, deep, detailed, application-specific diagnostics can be performed using on-demand packet capture throughout the network:

- Set triggers and thresholds based on live performance metrics and remotely capture specific real-time user or signaling traffic for immediate analysis using applications such as Observer®, GigaStor™, SART, and Wireshark
- Capture traffic of interest that traverses specific hops in the network, for historical analysis to identify anomalies

The Viavi Solution for Segmentation and Performance Monitoring with Live Traffic

This Viavi monitoring solution is an extension of the EtherASSURE platform which consists of turn-up and performance monitoring software, QT-600 test head(s), PacketPortal JMEP endpoints, and PacketPortal IV SFPProbes.

The solution also feeds the xSIGHT Customer Experience Assurance application, letting operators quickly understand how backhaul network performance impacts customer experience. The xSIGHT mediation and correlation engine can correlate transport KPIs with other network and service KPIs to provide a complete view of traffic performance and fault identification.



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