US WiMAX PROVIDER BUILDS NOC THAT SCALES WITH VSS MONITORING

Case Study

Business Summary

About the WiMAX provider

Industry: *Mobile broadband services Service Provider*

Location: *Kirkland, Washington, USA*

Business Challenges

Roll out a fail-safe national network monitoring system in 20+ markets with the ability to expand

Selection Criteria

- Speed and media conversion
  - » Copper and fiber
  - » 1 GigE and 10 GigE
- Fail-safe monitoring of redundant active and passive networks
- Support cost-effective growth

Monitoring Solutions

- V24 Expert
- V1.1 10 GigE Optical Tap
- V1.1 1 GigE Copper Tap

Benefits

- Increase analyzer efficiency through load-balancing and filtering
- Assure network reliability through a two-tier, fail-safe design with passive tapping aggregated to an intelligent traffic capture system

Savings

- Reduced need for 9 probes down to 1 per site
- Reduced the number of required switch ports by 10
- Allowed monitoring of 7 additional lines without adding probes

"VSS Monitoring reduced our CapEx and took our traffic monitoring to the next level."

Chief Network Architect

Business Challenges

The provider created the first 4G mobile network in North America, a network that currently covers 130 million people in over 70 markets in the U.S.

Since the company operates in a sector that is not only experiencing dramatic growth in bandwidth, but is also projected to continue that explosive growth, network monitoring is naturally a primary concern of the operations organization.

"Based on network planning for growth and performance, we were looking to roll out a new distributed monitoring system nationwide," said the architect. The system design included the spoke-and-hub topology found in many network operation center (NOC) implementations. Probes in the local markets collect traffic and forward the data to a central NOC for analysis and reporting.

But they had some challenges regarding traffic collection in the network at the 20+ local sites.

The Requirements

Of paramount importance was the need for the traffic collection solution to be transparent to the production and backup networks. With millions of users depending on the live network, no delays or outages were permissible due to traffic collection. It had to be transparent and fail-safe.

There was also a need to bridge speed and media differences between the network and the probes. At each location the network had eight 10 GigE fiber lines for user traffic and one 1 GigE copper line to the management network. The network probe had two 10 GigE fiber ports. This meant the traffic collection system must be able to:

- Accept fiber and copper in a passive, fail-safe manner
- Accept 1 GigE and 10 GigE
- Handle traffic from multiple 10 GigE ports in a non-blocking manner without dropping packets
- Filter traffic based on a range of criteria as required by the analysis solution
- Load balance the traffic from the 10 GigE and 1 GigE links across the two 10 GigE probe ports

The third requirement was to accommodate network growth cost effectively as they expanded capacity in a market and moved into new markets.

The solution

The need for line-rate capture of 100 percent of the traffic, combined with fail-safe operation made it clear that network taps were required. But the provider knew that not all tap solutions are created equal.

"We have experience with VSS Monitoring from earlier projects and like their two-layer approach," the architect said, "because it means we never have to worry about the traffic capture solution having an impact on our network."

The two-layer design uses passive optical taps and fail-safe copper taps with vAssure at the bottom layer, and then feeds the traffic into the intelligent layer for filtering and load balancing. vAssure guarantees link and session continuity regardless of the state of the taps.

"It also means we know we're getting all the traffic," he said. All network taps capture at line rate on a per-port basis, but when it comes to aggregating the traffic, things can break down."

vAssure is a VSS Monitoring technology for tapping Gigabit copper links so that the failover/switchover of the network connection from a tapped state to a directly-connected state (in the event of tap power-on, power-off or link state change) registers under 100 ms (typically 30-60 ms). This feature is critical to the continuous operation of outage-sensitive networks. Without vAssure, the normal time to re-establish a link (in standard auto-negotiation mode) is between 1-3 seconds, a fatal delay in production environments, where anything over 200 ms causes the link to drop.

VSS Monitoring uses a non-blocking architecture that handles full line rate on all ports, as opposed to the traditional telco backplane architecture, which can become overwhelmed when all ports approach line rate.

The provider installed taps on both the active and passive sides of the network so that even during a failover scenario, they see 100 percent of the traffic at the NOC.

Benefits of VSS solution

"The aggregation, filtering and load-balancing features of the V24 allow us to use our existing probes and monitoring solutions to maximum efficiency." the architect continued. "We can leverage our existing infrastructure without having to overbuild to get use underutilized probe port for every local link to be monitored."

In addition, advanced filtering capabilities lets them configure the system to forward only the captured traffic required for monitoring, meaning that the probes don't waste processor cycles inspecting and discarding unwanted traffic. This feature significantly increases efficiency in the monitoring system.

"As we expanded our network, the vStack+ and self-learning features became very important," he said.

vStack+ allows operators to manage taps distributed across multiple sites as a single system. And as additional units are added or removed, the V24 automatically reconfigures, significantly reducing turn up costs during network expansion.

The kicker - "We started the rollout with twenty sites and we're now past seventy, the power, simplicity and flexibility of the VSS Monitoring solution allowed us to expand our traffic capture infrastructure cost-effectively."

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VSS Monitoring, Inc. is the world's leading innovator of Distributed Traffic Capture Systems and network taps, focused on meeting the rapidly evolving requirements of security and performance conscious network professionals. Distributed Traffic Capture Systems herald a new architecture of network monitoring, one which fundamentally improves its capability and price-performance.

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