



# Case Study

## Business Summary

### About the Carrier

Industry: Mobile broadband services

Location: Hong Kong & mainland China

### Business Challenges

Roll out a 4G/TDD-LTE network with a fail-safe monitoring system with the ability to expand

### Selection Criteria

- Speed and media conversion
  - » Copper and fiber
  - » 10/100M, 1G and 10G Ethernet
- Support 4G and legacy traffic
- Support cost-effective growth

### Monitoring Solutions

- V2.16 10 GigE Optical Tap
- V2.16 1 GigE Optical Tap
- V16.8 19 GigE Copper Tap

### Benefits

- OPEX savings through self-learning configuration and simple management
- CAPEX savings by increasing analyzer efficiency through load-balancing and filtering
- Simple and cost-effective scalability

### Savings

- Reduced need for 3 to 4 times the number of analyzer ports
- Reduced the number of required switch ports by 30 per site

*"VSS Monitoring gave us painless deep network visibility."*

Network architect

## Business Challenges

The world's largest mobile carrier has a customer base with over 600 million subscribers and growing. Their GSM network provides mobile voice and internet access to Hong Kong and mainland China, including deep coverage of rural areas and support for roaming in hundreds of countries.

"In the past few years, the growth of mobile broadband traffic has imposed increasingly heavy demands on our 2G/3G network," a network architect for the carrier said. It particularly affected the E1-based backhaul and core network. As a result, the network team looked to 4G for the solution. But they took it a step further and pioneered a variation of LTE, Time-Division LTE (TDD-LTE), which is gaining momentum outside of China as well. They staged large-scale trials in six cities and began the process of building out a new 4G infrastructure.

The carrier migrated their GSM backhaul to IP, but given the infrastructure development required to support TDD-LTE, the 4G project was essentially a greenfield deployment requiring all new equipment and a new monitoring infrastructure to manage it.

### The Requirements

"Because our coverage extends across thousands of kilometers, from major metropolitan areas to rural areas, we have a wide range of interfaces," the architect said. "But we will see growth and the speed of many links will be upgraded in the future."

The new monitoring system had to support Ethernet interfaces from 10/100 to 1G to 10G. It also had to accommodate legacy and 4G traffic over IP.

As demand increases, the carrier will add more 1G transmission lines on a link, or upgrade the link to 10G. The monitoring system had to easily expand to incorporate these changes.

Given the volume of traffic on a network of this scale, the monitoring system had to support

filtering to reduce the amount of management traffic on the network, and load balancing to prevent congestion on any individual analysis port.

### The solution

It became apparent that a monitoring infrastructure was essential for gathering critical traffic from multiple locations, and from multiple links within those locations, and delivering it to centrally-located analysis tools. “We chose a VSS Monitoring solution as the foundation of our monitoring system because of the breadth of their product offering and the power of the feature set,” the architect said.

Passive optical taps and fail-safe copper taps on individual links capture 100 percent of the traffic and aggregate it to a distributed tap in each location which then feeds filtered traffic to the analyzers. The efficiency of the VSS system allows network engineers to analyze traffic from multiple sites at a single network operations center (NOC) with one multi-port analyzer.

### Benefits of VSS solution

**Reliability.** The set-and-forget nature of VSS Monitoring’s intelligent nodes is important in a network that spans thousands of miles and means that network traffic is never interrupted.

**Flexibility.** In addition, not only can the VSS Monitoring system accommodate the full range of interface speeds required, it allows 1G analyzer ports to monitor multiple links of any speed instead of having to match the speed of the tool to the speed of

each link to be monitored.

**Scalability.** The VSS Monitoring solution uniquely addresses the scalability requirement. Unlike other systems in which every box must be configured manually with a command-interface to be made aware of new hardware, VSS Monitoring devices use a self-learning multi-unit infrastructure to automatically connect to each other in a full-mesh topology. They automatically reconfigure as other units are added or removed, significantly reducing turn up costs during network expansion.

**Manageability.** In addition, any VSS Monitoring device can be configured from a single location with a simple GUI interface, regardless of how many sites and devices are connected in the mesh, making post-installment management a simple task.

**Efficiency.** In addition, advanced filtering capabilities let the carrier configure the system to forward only the captured traffic required for monitoring. This is important when you have eight 1 GigE ports monitoring dozens of links running at speeds that vary from 10M to 10G. Without filtering, the analyzer ports would be overwhelmed



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