CASE STUDY – Telco



Tier-One Telco Deploys Net Optics Director to Provide Full Visibility of Its 3G Mobile Network

A major Carrier uses Director's aggregation and selective filtering capabilities to Tap its entire network with minimal cost and complexity

Director

Industry: Telco

Objective:

Implement a cost-effective Tapping solution that would deliver total visibility of 300+ Gigabit Ethernet links in a 3G mobile network

Approach:

- Use Net Optics Director DIR-7400 to aggregate links to a more manageable number
- Selectively filter on various parameters before aggregating to prevent oversubscription
- Provide traffic to multiple monitoring solutions

Technology Improvements:

- Directors can be installed or removed without affecting network
- Daisy-chaining of Directors enables visibility of entire site
- Equipment with copper, fiber, or 10GigE ports can monitor traffic

Project Outcomes:

- Total site visibility for vastly improved monitoring
- Significant cost savings from aggregation
- Protection of evolving mobile network for competitive advantage

A Carrier's Dilemma: Tapping 300+ High-Traffic Links without Overspending

This Carrier needed a monitoring solution that would provide full visibility of its entire 3G mobile network while avoiding the expense of Tapping every link separately.

For twenty years the Carrier has delivered comprehensive and cost efficient voice, video, and data communication solutions for small and large businesses. As a major enterprise located in the eastern hemisphere, the Carrier maintains several subsidiary global brands and a growing range of offerings. The Carrier owns and operates "We're impressed with the value and versatility of the Director. It allowed us to meet our goal of expanding visibility while saving us the prohibitive expense of monitoring more than 300 ports separately."

- Carrier IT Director

its own network infrastructure, providing services directly to end users, and also acts as a wholesaler to other service providers. Through another wholly owned brand, it provides broadband, wireless, and dial-up Internet services.

The Carrier offers training to customers as well as on-site technical support and maintains a test lab with more than 100 live systems. For customer convenience, it offers remote programming and a national database of subcontractors. Through converged channels and business processes combining technologies, devices, and services, the Carrier provides a unified communication solution.

Optimizing Security and Capabilities

The Carrier's goal is to become the "go-to" provider for communications solutions in its broadening marketplace. "We were not only seeking to utilize technology more effectively within our own business," says the Carrier's Director of Information Technology, "but we also wanted to provide advanced options to our large and small customers. Business phone systems had been our core offering for almost two decades, but we diversified into other areas to deliver a more complete and integrated offering to our customers." That total offering now encompasses refurbished parts and managed services, data storage solutions, and video conferencing tools, among other technology.

Another goal for the Carrier was to provide reliable management of the various business devices and systems to increase customers' productivity. Management solutions include capabilities such as Single Number Reach for speedier decision-making, flexible and scalable solutions for employee mobility, and cost-saving integration resources for IT departments. All this adds up to the agility to respond quickly to change; improved business continuity; and enhanced collaborative capabilities such as document sharing, whiteboard, chat, instant messaging, and so forth. The Carrier also plans to expand customers' presence with new interactive voice response (IVR) services, and comprehensive interoperability.

These goals demanded enhanced levels of functionality. Net Optics needed to deliver a very robust, scalable solution with expanded features and technological range—and do it while holding costs down

The Challenge: Monitor More than 300 Ports Affordably

To gain comprehensive visibility, the Carrier needed to tap more than 300 Gigabit Ethernet links. However the equipment required for this monitoring appeared to be prohibitively expensive. The solution was to aggregate all of these links into a more manageable number. Total traffic levels were quite high, so simple aggregation was not appropriate—the aggregated traffic would overrun the output link bandwidth, and packets would be dropped. The Tapping solution would have to be able to filter on a large number of different parameters before aggregating the traffic. It would also need to provide this traffic to multiple monitoring solutions.

The network was distributed over nine separate geographical locations, and the Carrier did not want to maintain monitoring equipment at all nine sites. The network is continually evolving, and the links consisted of a combination of multimode and singlemode fiber as well as some 1000BaseT copper links. The tapping solution would need to be modular and capable of supporting all the different interfaces.

Aggregating for Efficiency and Cost Control

Director provides one-to-one, many-to-one, one-to-many, and many-to-many mappings of network links and Span ports to monitor ports—in other words, traffic from any network links and Span ports can be aggregated into a single stream and copied to any one monitoring port. Additionally, the same aggregated traffic stream can be copied to more than one monitoring port at the same time, enabling different groups to monitor the same data without conflicts. Multiple diverse aggregations and regenerations can operate simultaneously without interfering with each other functionally or causing slow-downs. Director aggregates, regenerates, switches, and filters traffic completely at line speed, even for fully-utilized 10 Gbps ports.

The Carrier's Solution: Gaining the Benefits of Compressive, Cost-Effective Visibility

As shown in the diagram, the Carrier selected a combination of more than 40 Director DIR-7400 Data Monitoring Switches with a variety of interface modules, as well as 300+ passive inline Taps. The inline Taps are installed on all required GigE links; the outputs of these passive Taps are connected to the 24 x RX ports on each of the Director taps.

The purpose of combining passive inline taps with the Span RX version of the Director means that Director platforms are not installed inline on any of the links. This means that they can be installed or removed, power-cycled, or have their interfaces changed and so on, without affecting the mobile network. Director Data Monitoring Switches are also equipped with two or four 10GigE ports, which are used to daisy-chain multiple Director units together into a single logical system. This means

that monitoring equipment only needs to be connected to a single Director at each site in order to achieve visibility of the entire site.

In some instances, the 10GigE ports are also used to bring aggregated traffic back from remote sites to a central monitoring location so some locations do not need any monitoring equipment onsite.

Each Director chassis also has 10 SFP output ports that can be used with either copper or fiber SFPs, allowing monitoring equipment with either copper, fiber, or even 10GigE ports to be used to monitor the traffic.

The following diagram shows how the Director-based tapping solution provides traffic into six or more different monitoring solutions.



To learn more, visit www.netoptics.com

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