

CASE STUDY: ASIA PACIFIC TELECOM GROUP (APTG)

New MAN Drives Costs Down and Services Up



SUMMARY

Asia Pacific Telecom Group (APTG) is a major service provider in Taiwan and consists of the following subsidiaries: Asia Pacific Broadband Telecom (APBT), Asia Pacific Online (APOL) and Asia Pacific Broadband Wireless (APBW).

OBJECTIVE

APTG wanted to develop a nationwide metropolitan access network (MAN) network in Taiwan. Its plan was to rollout the network in phases expanding network services and user capacity as revenue and operational support allowed.

The MAN would ultimately provide: (1) central backbone for all major universities and colleges in the country, (2) virtual private LAN services (VPLS) for enterprise networks; and, (3) Broadband Internet access for residential and enterprise users.

Provisioning, accounting and billing support for each subscriber was also a requirement along with carrier-level availability of the network.

SOLUTION DESCRIPTION

APTG implemented a multiprotocol label switching (MPLS) metropolitan area network (MAN) across its existing IP network by installing NetIron Metro routers from Foundry Networks. The feature set of Foundry Network's family of metro routers is specifically designed to address the needs of service providers.

The architecture of the MAN was developed around a series of Multiple Gigabit/10 Gigabit links.

An inter-city MPLS/Layer 3 backbone was at the core of the network with connections to multiple MPLS/Layer 3 city rings. City rings then connect to access rings which support virtual DSL (VDSL) and layer 2 VLANs and Layer 3 OSPF.

PROVIDER CORE

Multiple NetIron IMR 640 Metro routers interconnected with 10-Gigabit Ethernet modules form the backbone with Gigabit Ethernet links to the subordinate city rings.

NetIrons are configured with OSPF and serve as label switch routers (LSRs). Traffic engineering is provided by RSVP-TE which controls the traffic flow of label switched paths (LSPs) using OSPF-TE and ISIS-TE. This traffic management is of particular use to service providers to guarantee the correct bandwidth is assigned to each of its subscribers as well as deliver the required quality of service (QoS) or class of service (CoS). Hot standby and load sharing LSPs are supported on all NetIron Metro routers providing tunnel redundancy and bandwidth scalability.

[HTTP://WWW.APTG.COM.TW](http://www.aptg.com.tw)

INDUSTRY

Service Provider

COMPANY DESCRIPTION

Asia Pacific Telecom Group (APTG) is a major service provider in Taiwan.

OBJECTIVES

- Install a scalable metropolitan area network (MAN) that can support adoption of new voice, video or data services and users without requiring costly upgrades, equipment trade-outs or downtime
- Implement network architecture that can terminate Ethernet (10/100 Mbps), Gigabit Ethernet (1000 Mbps) and SONET interfaces
- Support carrier-level provisioning, accounting and billing capabilities for subscribers
- Adopt a MAN architecture that can provide secure virtual private LAN services for major universities, enterprise networks, and Broadband Internet access for enterprise and residential users

SOLUTIONS

- Implemented a multiprotocol label switching (MPLS) metropolitan area network (MAN) across an existing IP network by installing Foundry NetIron Metro routers, specifically the NetIron 800, NetIron 1500 and NetIron IMR 640
- All NetIron Metro routers provide scalable port growth to allow network investment to match growth of network subscribers and services and installation at all points of the network from multi tenant unit (MTU) to provider edge (PE) and provider core (P) to Internet edge (IE)
- Cross-platform support of virtual private LAN services (VPLS) by NetIron Metro routers provides both point-to-point and multipoint-to-multipoint secure VPN services to support multiple subscriber sites and services

RESULTS

- Saved 30 percent on network upgrade due to Foundry price points
- Eliminated leased line costs
- Reached ROI in multiplexers within 15 months
- Completed upgrade with no interruption in service
- Experienced no significant downtime after upgrade

CITY RINGS

NetIron 1500s and NetIron 800s provide the framework for the city rings and are interconnected via long haul MetroLink Gigabit Ethernet modules acting as trunks using single links employing link aggregation (IEEE 802.3ad). Link aggregation provides dynamic aggregation of multiple ports to provide increased performance. Up to four 10-Gigabit Ethernet ports and up to eight Gigabit Ethernet ports can be aggregated to form single trunks. Cross module port aggregation is supported for enhanced reliability.

NetIron 800s are configured with OSPF and act as label edge routers (LERs). Both point-to-point (Draft Martini) and multi-point-to-multipoint (Draft Lasserre-Vkompella) virtual private networks (VPNs) are used to connect multiple subscriber sites. All VPN connections operate independently of subscriber-specific protocols.

ACCESS RINGS

NetIron 400s with Gigabit Ethernet modules provide the structure of the access rings. Layer 2 VLANs, Layer 3 OSPF and virtual DSP (VDSL) is supported on the access rings.

THE RESULTS

The commonality of modules, interfaces and functions and overall modularity of the NetIron Metro router product family allowed APTG to add incremental services and revenue with minimal additional investment in Foundry equipment.

The shared module set among the Foundry Metro routers also laid the foundation for lower, future maintenance costs by reducing the costs associated with providing spares for the network.

Today, a mix of over 40 NetIron 800 and 1500 Metro routers and five NetIron IMR 640s are installed in the APTG service provider network.

The university backbone, which comprised the first phase of the network, interconnects 290 universities and colleges and provides access to an estimated 250,000 users per day.

Additionally, well over a thousand subscribers use the enterprise services of the APTG metropolitan area network (MAN) running a broad range of applications from web and email traffic to multicast video, enterprise resource planning (ERP) and real-time and just-in-time applications.

“ FOUNDRY’S EXPERIENCE ON IMPLEMENTATION OF LARGE SCALE METROPOLITAN AREA NETWORK, PLUS THE ROUTER FEATURES, THE PRICE PERFORMANCE, MADE FOUNDRY THE BEST SOLUTION FOR US, ”

“ THE SCALABILITY OF FOUNDRY’S SOLUTION GIVES US A LONG-TERM APPROACH TO SUPPORTING INCREASING NETWORK DEMANDS ”

— Richard Tso,
Director,
Network Planning Department,
APTG

FOUNDRY NETWORKS

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