∕infinera®

CORIANT IS NOW PART OF INFINERA

Telstra Migrates to IP/MPLS Network Core in Under 18 Months

Delivers Triple Play Services, Improves Network Efficiency and Reduces Costs

CHALLENGE

Telstra's vision was to become a key supplier of content, transport and distribution. In order to make this vision a reality, they needed networks that integrated seamlessly across all devices and were scalable, secure and robust. Telstra planned to transform its core infrastructure into a single IP backbone using Multiprotocol Label Switching (MPLS) to carry virtually any type of voice, video or data traffic. They wanted to invest in the best of breed next-generation technologies to improve services to customers and reduce cost and complexity in their networks.

When Telstra commenced this project, the company had multiple overlay networks, including an Asynchronous Transfer Mode (ATM) Frame Relay network, an IP network and an Ethernet network. The network transformation project was designed to provide next-generation services over an integrated, upgraded and simplified network.

"The way to move to this environment with confidence was to move into a carrier IP/MPLS core and define services at the service level on an IP/MPLS edge platform," said Luigi Sorbello, director of network technology for Telstra. "In building the IP/MPLS environment, one of the elements we were looking at was the capability not only to do Ethernet aggregation but also to deliver ATM, Frame Relay and E1 capability over what we call the Multiservice Edge, or MSE," Sorbello noted.

SOLUTION

Telstra migrated to all next-generation networks, including more efficient services based on IP/MPLS virtual private networks. They also needed to be able to deliver ATM and Frame Relay services as customers migrated to next-generation services as there were some key customers, particularly in government and financial sectors, who still used ATM and Frame Relay services.

"The difficulty was finding a next-generation platform that would deliver all of those services over one box and one chassis. That capability didn't exist with anyone, but Coriant stepped up to deliver the platform that would meet our requirements."

Customer

Location
Australia

Challenge
- Replace legacy core infrastructure
- Migrate to single IP/MPLS backbone for all voice, video or data traffic
- Offer new services to customers
- Reduce cost and complexity of network infrastructure

Solution
- Coriant project management, professional and deployment services
- Coriant™ Modernization and Migration Services (MMS)
- Coriant™ 8800 Smart Routers

Results
- Upgraded network within 18 months
- Enabled delivery of new, next-gen services
- Reduced infrastructure elements by 74% from 856 to 220 nodes
- Delivered 99.999% reliability
- Reduced OpEx costs

"Product capabilities had to be considered in great detail," Sorbello noted. "When you're talking about existing products and an embedded base of key corporate and defense customers that had used ATM and Frame Relay for 10 years-plus, you need to be sure that you're delivering features as specified and that they operate in the same kind of way." Coriant was chosen as one of 4 key technology partners for this project, supplying professional services and Coriant™ 8800 Smart Routers for deployment in regional and metropolitan networks throughout Australia.

Multiservice Edge Solution

Telstra liked the fact that Coriant could support Virtual Private LAN Service (VPLS) and Pseudowire Emulation Edge-to-Edge (PWE3) services. "Coriant was the only vendor that supported the ATM routing protocol Private Network-to-Network Interface (PNNI) over MPLS and one of only a few vendor solutions that offered hitless software upgrades," added Tibor Latorcai, ATM network architect for Telstra.

Telstra also appreciated Coriant's willingness to accelerate a portion of its development program to match Telstra's needs. Telstra wanted to purchase a standard product; it did not want custom code. Timing of new software releases on the Coriant product roadmap were closely coordinated to correspond with Telstra's deployment requirements.
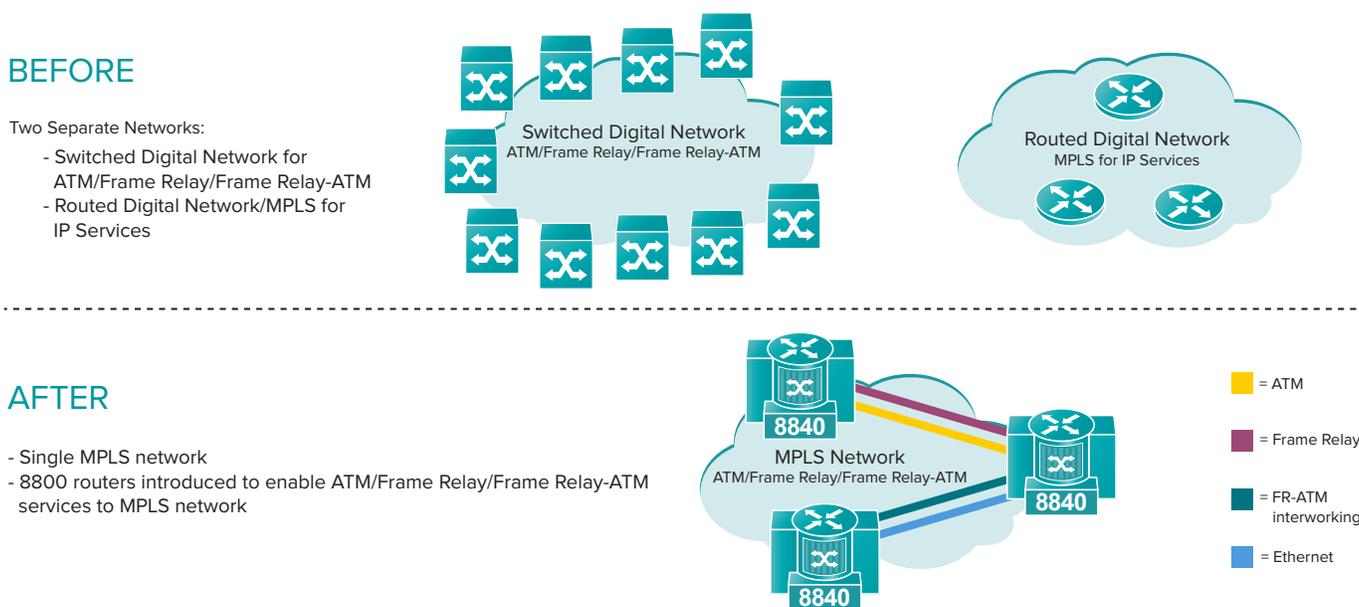
The multiservice edge – supported by the 8800 Series – was a critical element of Telstra's transformation project because it reduced the number of platform technologies deployed by enabling legacy and next-generation services to run through the same edge platform. Streamlining the number of platforms in turn drove OpEx savings and enabled Telstra to have a single multi-skilled workforce, rather than specific work groups dedicated to particular platforms.

In addition, due to its wide breadth of multiservice features and functions, the 8800 Smart Routers provided Telstra with the ability to offer a wide variety of future services beyond its current applications, including mobile backhaul and Carrier Ethernet.

A Phased Approach

Transformation of Telstra's multiservice edge was planned in three phases. The first phase introduced the 8800 Series into the core of the existing ATM network, to alleviate capacity constraints and cap investment in legacy infrastructure. Initially, customers' ATM and Frame Relay traffic fed onto the ATM backbone, but later that traffic moved onto the IP/MPLS backbone via the unique Coriant PNNI capabilities.

The second phase of Telstra's network transformation involved creating regional and metropolitan Ethernet networks to provide aggregation for Digital Subscriber Line (DSL) high-speed access networks, which were traditionally based on ATM. In the third phase, the IP/MPLS network transformation initiative, Telstra moved all customer ATM and Frame Relay traffic off legacy ATM switches and, through a user-to-network interface, onto the IP/MPLS network. The change was transparent to customers, who were able to continue to use their existing ATM and Frame Relay premises equipment.

BEFORE

Two Separate Networks:
- Switched Digital Network for ATM/Frame Relay/Frame Relay-ATM
- Routed Digital Network/MPLS for IP Services

Switched Digital Network
ATM/Frame Relay/Frame Relay-ATM

Routed Digital Network
MPLS for IP Services

AFTER

- Single MPLS network
- 8800 routers introduced to enable ATM/Frame Relay/Frame Relay-ATM services to MPLS network

MPLS Network
ATM/Frame Relay/Frame Relay-ATM

8840

8840

8840

■ = ATM
■ = Frame Relay
■ = FR-ATM interworking
■ = Ethernet

	TASK	OUTCOME(S)	CURRENT STATUS
PHASE ONE	Introduce 8800 Smart Routers into the core of Telstra's existing ATM network	Alleviated capacity constraints; capped investment in legacy infrastructure	Replaced 16 core ATM switches with 12 8800 router nodes
PHASE TWO	Create regional and metropolitan Ethernet networks	Provided aggregation for DSL high-speed access networks	Equipment in place; traffic migration took place
PHASE THREE	Move all ATM/FR traffic from legacy switches to new IP/MPLS core network via a user-to-network interface	Change was transparent to customers; may continue to use existing ATM/FR premises equipment	Node upgrade to support new loads took place; once phase three was completed, 220 8800 router nodes replaced 856 existing nodes

Also in phase three, Coriant upgraded the 8800 Series nodes installed in Telstra's network to the first of several new software loads. This simplified the network topography, with 220 Coriant 8800 Smart Router nodes replacing the 856 nodes that existed previously — a 74.3% decrease in infrastructure that contributed to Telstra's improved network efficiencies.

Throughout the project, Coriant worked closely with Telstra personnel to ensure that the development cycles of new software loads for the Coriant 8800 Smart Router nodes corresponded with Telstra's deployment schedule.

CORIANT SERVICES

Coriant provided a dedicated team of network consultants, engineers and services program staff devoted to Telstra's network transformation project. This team worked in partnership with Telstra's architecture and design group, collaborating in the development of network architecture, detailed network design and the creation of engineering documents to support the overall network transformation.

To meet its aggressive rollout plan, Telstra worked with Coriant's Services team to ensure that the Coriant products would be fully integrated with equipment from other vendors used in the IP/MPLS network. "In terms of integration, it was not just about the network elements but also the network element layer," noted Sorbello. "The operations support system piece is as important to us. We needed interface documentation to ensure that the Coriant product would work with our existing domain manager. That's very specialized knowledge. And that's why we enlisted Coriant."

Additionally, Coriant Services experts supported Telstra personnel in the pre-deployment testing program. "Telstra's objectives in partnering with Coriant Services were two-fold," Sorbello said. "We needed to engage at multiple levels around the roadmap and deliver the right features and capabilities. It was not just about the roadmap but also about growing the knowledge and skillset within Telstra around this product. If we have the right skillset and the right tools for the job often we get well ahead. If you don't, you have to learn as you grow. Coriant Services helped us understand the features we needed and secondly, they helped us understand how we could migrate in an almost like-for-like manner."

Once phase three was completed, the network topography was simplified with 220 Coriant 8800 Smart Router nodes replacing the 856 nodes that existed previously, a 74.3% decrease in infrastructure that will contribute to Telstra's improved network efficiencies.

RESULTS

Less than 18 months after the project commenced, Telstra unveiled the largest fully integrated wireline and wireless national Internet Protocol (IP) network in the world – the Telstra Next IP™ network. Telstra had invested AUD $1.5 billion to establish this network, which serves over 95% of Australian businesses. Combined with Telstra's Next G™ wireless network, the Telstra Next IP network offers a seamless user experience with one-command simplicity.

The Telstra Next IP network enables Telstra to offer its customers differentiated, integrated and unique services across multiple devices and platforms. Through this network, Telstra can offer unified communications, virtual meetings and instant collaboration, instant messaging, multimedia Web conferencing and more – all with a single, simple interface across all devices.

The Telstra Next IP network provides world-class reliability, enhanced security and its IP/MPLS core is scalable up to 92 Tbps per node and offers 99.999% reliability. When releasing its next financial results, Telstra was able to announce that its investment in the Telstra Next IP network was already delivering results for shareholders and customers. The Telstra Next IP network was driving customer take-up of data services, with IP and data use growing by 6%. This was driven by a strong demand for access services, which grew by 28% against the prior corresponding period.

ABOUT TELSTRA

Telstra is Australia's leading telecommunications and information services company. Telstra offers a full range of communications services and competes in all telecommunications markets, providing 16 million mobile services, 7.5 million fixed voice services and 3 million retail fixed broadband services in Australia.

infinera®

www.infinera.com