

Tata Consultancy Services

EXECUTIVE SUMMARY

Challenge

Build a world-class, multitenant New IP network that is SDN-ready and migrate a complex environment while preserving the existing network segmentation and IP addresses.

Solution

- Brocade MLX Series Core Router in network core.
- Brocade VDX Switches and Brocade VCS Fabric technology for aggregation and access.
- Brocade ICX 6610 Switches for aggregation.
- Brocade Turbolron 24X Switches for switching Internet-bound traffic.
- Brocade CER 2000 Series compact routers for Ethernet edge routing.
- Brocade ADX Series of application delivery switches for maximizing application performance.
- Brocade Network Advisor for centralized management.

Results

- Achieved smooth migration of client's business applications and database systems with no change of IP addresses.
- Built in SDN-readiness for the future.
- Improved network utilization and maximized application availability.
- Delivered an application-aware network that met the client's need for multitenancy.
- Achieved consistent high reliability.

A Partner with a Path to a Software-Driven Future

Tata Consultancy Services (TCS) is a global leader in IT services, digital, and business solutions. As part of its commitment to clients, Tata promises to deliver the highest levels of certainty and satisfaction. Recently, the company was engaged to help one of the 100 largest companies on the Financial Times Stock Exchange (FTSE) build out a new data center. The client is a leading life and pensions company, headquartered in London, and offers a range of retirement and pension services to more than five million customers. To maintain its lead in a highly competitive market, the client had launched a service improvement program to accelerate time to market for new services, improve delivery efficiency, and remain flexible as new market opportunities arise.

Its existing data center incorporated a diverse range of technologies and systems. The Cisco data network had evolved over many years, resulting in fragmented VLAN Trunk Protocol (VTP) domain networks with multiple core switches and a mix of two-tier and flat network architectures. Point-to-point WAN links connected three data centers and 11 office locations, which altogether used more than 1,100 network devices from various vendors. This complexity demanded intensive management and extraordinary amounts of time to bring a new service to market while increasing operation costs.

Infrastructure age and complexity also restricted the company's ability to scale to meet growing business requirements.

More than 8,000 users needed access to enterprise applications and resources that resided on mainframes and servers, and storage demands were steadily increasing. The data center network also had to support quality of service for voice traffic.

"Our client engaged TCS to build a new data center and migrate its business applications," said Ramesh Bist, Technical Architect for TCS. "The new data center had to be able to support multitenancy and enable a path to SDN. At the same time, we needed to migrate all applications and millions of policies to the new data center with no changes to IP addressing of the application systems."

WHY BROCADE

“Brocade offers extraordinary value for our client. We could deliver a single-vendor solution at every layer—from high performance at the core to 10 Gbps fiber networks for access and load balancing. The network is open and application-aware with a clear path to SDN. And Brocade was ready with support and advisory capabilities to help our engineers every step of the way.”

— Ramesh Bist, Technical Architect at Tata Consultancy Services

WHY TCS

“TCS is a Brocade Global Systems Integrator partner. TCS’ commitment to collaboration, combined with its experience and strong core competencies in developing and delivering strategic solutions, ensured success for our joint customers as well as for Brocade.”

— Lynn Garrick, Director, Systems Engineering at Brocade

Extending existing Layer 2 networks to the new data center was a challenge. Numerous Layer 2 VLAN ID and IP address conflicts existed between multiple tenant networks. The new network solution had to enable TCS to solve this issue. TCS has Service Level Agreements in place with the client, so the new network had to deliver high availability and reliability. The client’s roadmap also included services that will use Software-Defined Networking (SDN) technologies to enhance operational efficiency and accelerate time to market for new services. The new network had to be open, flexible, and ready for software-driven solutions

A New Network for the New IP

As TCS evaluated potential solutions for its client, it knew that a traditional data center network might suffice to meet today’s growth and reliability needs. However, in addition to its technical requirements, the client needed a solution with built-in longevity. The new network could not be obsolete in two to three years. After reviewing multiple vendor offerings, specific features, and roadmaps, TCS chose Brocade® solutions. TCS is a Brocade® Global Systems Integrator (GSI) partner, and together, they have brought customers unprecedented choice and flexibility in end-to-end networking solutions. Brocade’s networking technology is combined with TCS’ strong core competencies in developing and delivering strategic solutions to customers.

“Brocade offers extraordinary value for our client,” said Bist. “We could deliver a single-vendor solution at every layer—from high performance at the core to 10 Gbps fiber networks for access and load balancing. The network is open and application-aware with a clear path to SDN. And Brocade was ready with support and advisory capabilities to help our engineers every step of the way.”

Building a Network to Bank On

TCS designed the new network with redundant Brocade MLX® Core Routers at the data center network core. The Brocade MLX Series Core Routers support Virtual Routing and Forwarding (VRF), which enabled TCS to provide multitenancy and circumvent the IP address issues. The VRF technology separates internal traffic from external traffic into the correct physical connections through the firewalls. Brocade MLX Series Core Routers also support OpenFlow, providing an SDN solution for programmatic control of the network.

Using Brocade VDX® Switches and Brocade VCS® Fabric technology, TCS consolidated the aggregation and access layers, which connect to the core through 4x10 GbE links. The Brocade VCS Fabric technology supports VLAN tagging which solved the problems associated with overlapping Layer 2 VLAN IDs across the data center. The Brocade VDX Switches provide 1/10 Gbps connectivity to servers and for uplinks, while providing the option for future deployment of Fibre Channel over Ethernet (FCoE).

Brocade ICX® 6610 Switches play a variety of important roles throughout the network and are stacked in each area to enable fast scalability without management complexity. They aggregate traffic bound for the Multiprotocol Label Switching (MPLS) network in the MPLS edge zone. They also provide traffic aggregation in the DMZ, the management zone, and the WAN zone. The Brocade ICX 6610 Switches also support OpenFlow for future SDN deployments.

In the client’s new network, no direct external connections are permissible. All traffic must pass through a firewall. Brocade Turbolron 24X Switches are compact, high-availability solutions that route Internet-bound traffic through Internet and Virtual Private network (VPN)

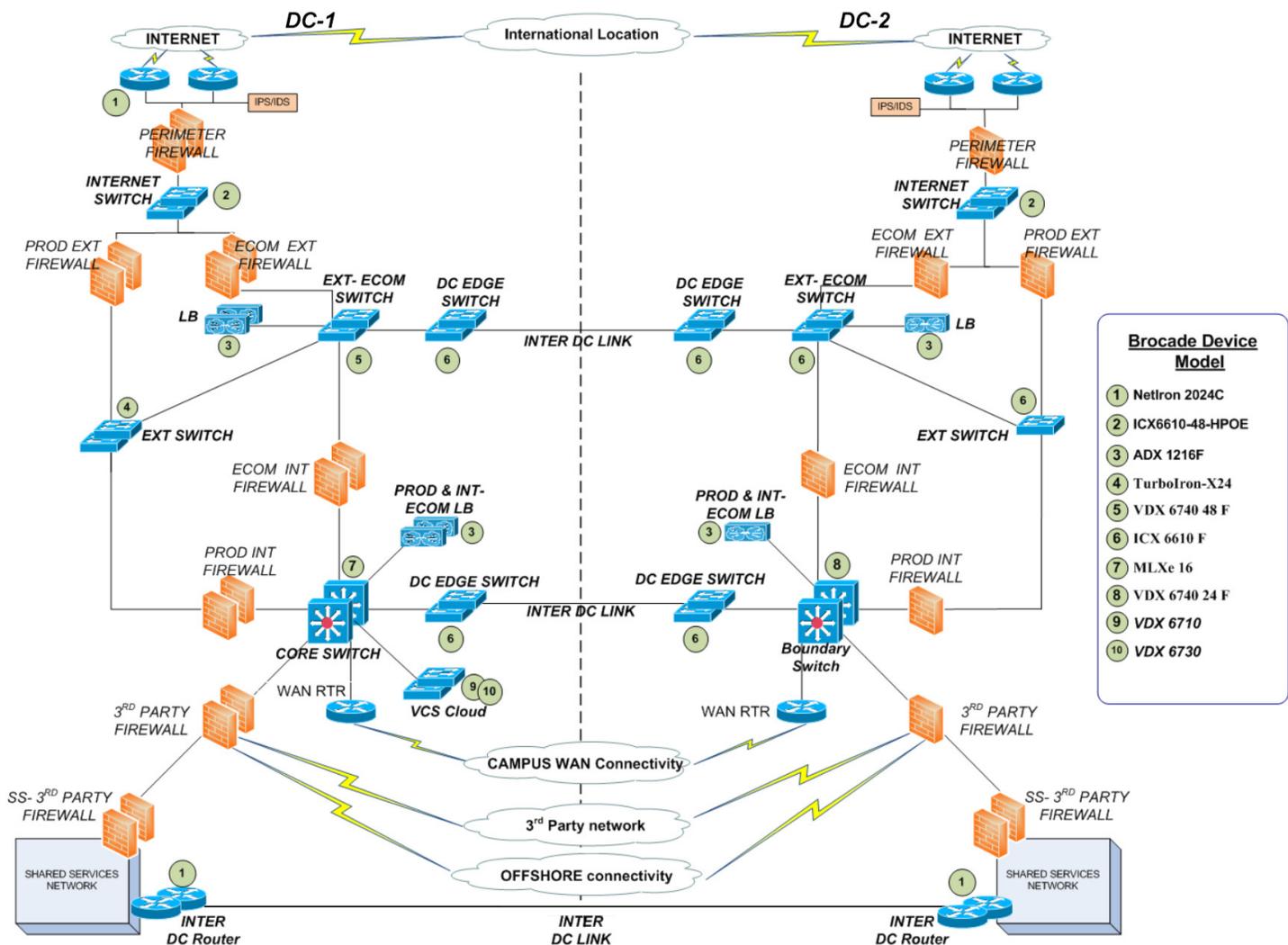


Figure 1: Network for Financial Services Client Designed and Implemented by TCS.

firewalls to the Internet zone. With an ultra-low-latency non-blocking architecture and low power consumption, they provide a powerful, cost-effective solution for Internet connectivity. They also support multicast traffic for the client. The Brocade CER 2000 Series of compact routers perform Ethernet edge routing in the Internet zone and also support OpenFlow.

The Brocade ADX® Series of application delivery switches maximizes application performance through load balancing, application health monitoring, and application security features. It supports multitenant deployment with full tenant

isolation, providing each with its own system configuration, network stack, resource, and management, running on a single physical system.

TCS also selected Brocade Network Advisor for managing the client's network. Brocade Network Advisor gives the TCS team visibility into the entire infrastructure from a single point, dramatically improving their efficiency.

Support From Start to Finish

"TCS engineers managed the network deployment and migration, but Brocade was there to help us every step of the

way," said T.R Satish, a Technical Architect at TCS. "From sharing their roadmap to SDN during the evaluation process to helping us onboard our client to the new network, Brocade support was excellent."

The TCS team worked directly with Brocade solution architects and implementation engineers to help refine and optimize TCS' network design and implementation process. Along the way, Brocade helped the TCS team enhance specialty skills, transfer knowledge, and test the TCS solution in a Brocade lab to ensure trouble-free deployment.

Maximized Business Success with Technical Advantages

Using Brocade advanced features and technologies, TCS successfully achieved smooth migration of the client's business applications and database systems with no change of IP address. Virtual cluster switching and Brocade VCS Fabric technologies improved network utilization and maximized application availability by eliminating the spanning tree protocol and providing active connections to redundant links with full throughput. At the same time, TCS delivered an application-aware network that met the client's need for multitenancy.

"The solution has worked well for almost three years now," said Satish. "It integrated easily with other Cisco-based networks in the data center and we deployed virtual cluster switching to provision application services over server platforms including HP Blade C7000, DL 380, Hitachi Blade CB2000, IBM Flex x240, IBM Power series, and VMware.

Planning for the Future

The client's network also is ready to implement SDN. With support for OpenFlow on almost every Brocade system, TCS expects that they can help the client transition easily to SDN and gain even more network agility and programmatic control. TCS is already investigating potential use cases that can take advantage of SDN technologies.

Meanwhile, TCS is exploring the deployment of virtual routers and virtual load balancers for sandbox environments and working with the client to extend the Brocade network to office locations. Whatever the client needs, whenever it's needed—TCS has the experience, solutions, and support from Brocade to help it meet its commitment of delivering the highest levels of certainty and satisfaction to its clients.

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