

Westman Communications Group



EXECUTIVE SUMMARY

Challenge

Add intelligent routing capabilities at the network edge and take the network to a new level of performance, versatility, and future-proofing.

Solution

Brocade MLXe Core Routers for core routing between four locations.

Results

- Simplified BGP routing architecture to reduce operational complexity and improve scalability.
- Achieved exceptional improvements in routing convergence performance and eliminated impact on the network.
- Simplified management with the ability to deploy dual IPv4 and IPv6 protocols and scalable Internet route tables for both.
- Gained better performance at lower capital and operational costs.

Everything They Wanted, More Than They Expected

Westman Communications Group is a customer-owned cooperative that provides cable TV, Internet, and phone services to communities throughout western Manitoba, Canada. Although Westman's subscriber base is growing steadily, exponential increases in bandwidth consumption across its customer base were straining its network.

Westman's Brandon headquarters location houses its primary routing equipment. Here, a pair of Cisco 7600 Series routers with 10 Gbps supervisor cards carried the majority of the traffic load, while several Cisco Catalyst 3750 switches were deployed in Toronto operating as Layer 2 switches. Since this equipment was originally deployed, Internet routing tables had grown substantially. If a network problem disrupted the network's Border Gateway Protocol (BGP) Internet routing, the Cisco 7600 router had to converge routes around the problem to continue delivering services. However, converging routes required such intensive processing that overall network performance was reduced.

Westman also wanted to add intelligent routing capabilities at the network edge to reduce the burden on the primary routers. Instead of having to backhaul edge routing to the primary Brandon site, the Westman team wanted to keep edge routing where it belonged—at the edge of the network.

"We were accustomed to working with Layer 2 switching and Layer 3 routing on our existing routers," said Graham Johnston, Network Planner at Westman Communications Group. "As we began looking for a new solution, we wanted both capabilities on the new systems."

Westman also needed dual protocol stacking features to support its ongoing IPv6 rollout. Finally, the team wanted a full suite of Multiprotocol Label Switching (MPLS) features, which would give them options for creating Layer 2 and Layer 3 Virtual Private Networks (VPNs). They explored an offering from Cisco, which was too expensive. Next, they looked at a Juniper solution, which was less expensive than Cisco but required a higher learning curve. And then they evaluated Brocade® solutions.

WHY BROCADE

“This BGP convergence is an order of magnitude faster than what we experienced with the Cisco 7600. At the same time, we achieved the functionality of a mixed Layer 2/ Layer 3 platform while avoiding Spanning Tree and its pitfalls.”

– Graham Johnston, Network Planner at Westman Communications Group

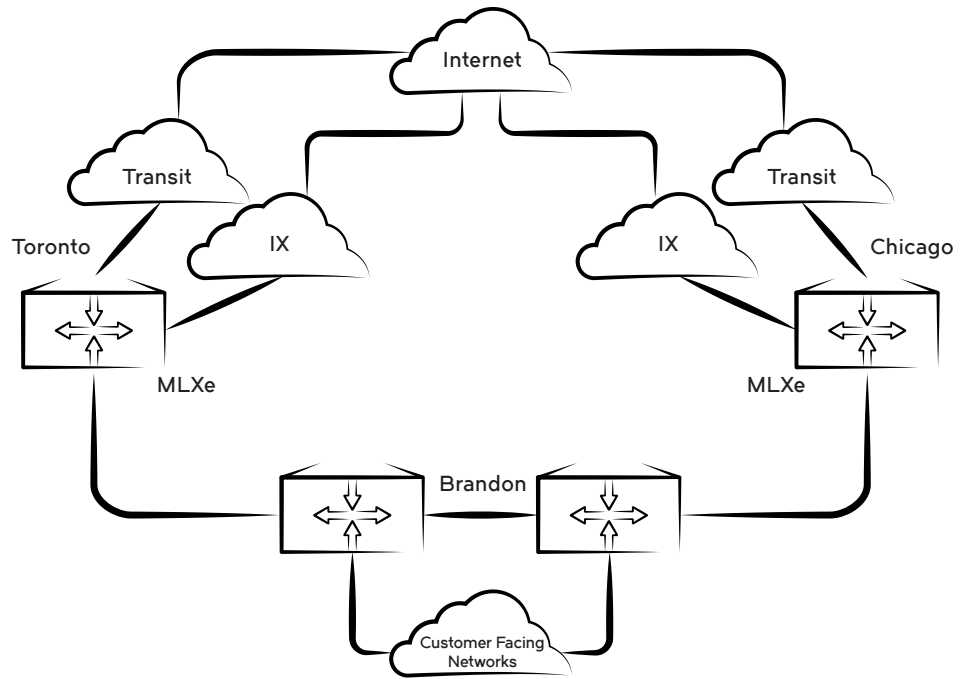


Figure 1: Westman Group Network.

Inspiring Confidence

The Westman team conducted a proof of concept using Brocade MLXe® Core Routers, and they put the routers to the test. Brocade MLXe Core Routers are built with a state-of-the-art, sixth-generation, network processor-based architecture and terabit-scale switch fabrics. They provide a rich set of high-performance Layer 2/3, IPv4, IPv6, MPLS, wire-speed encryption, and Software-Defined Networking (SDN) features. As a result, these routers are ready to address the diverse needs in environments like Westman's.

“The proof of concept demonstrated that we could simplify our environment if we stayed with Layer 3 routing,” said Johnston. “That was a nice surprise. Then we performed MPLS interoperability

testing with our existing Cisco environment. That gave us even more confidence.”

The solution's MPLS Layer 2 VPN capability offers the option to deliver services to places in the network where Layer 3 is less cost-effective. Another feature, Virtual Private LAN Service (VPLS) connectivity, provides a Layer 2 service over an MPLS infrastructure, providing point-to-multipoint connectivity across the MPLS domain. This capability allows traffic to flow between remotely connected sites as if they are connected by one or more Layer 2 switches.

To avoid implementing Spanning Tree Protocol and maintain high availability, Westman can use the Brocade MLXe

Router Multi Chassis Trunking (MCT) over Virtual Leased Line (VLL) capability. With MCT, two chassis act like a single logical switch. Devices on both sides of the MCT logical switch perform as if they are connected to a single switch. To maintain continuous operations, the MCT feature provides fast link and node failover protection while simultaneously maximizing network utilization. For example, MCT supports active and standby redundancy for VPLS and VLL pseudowires, giving Westman flexible options for redundancy. MCT also supports dynamic Layer 3 routing. In this design, there are no Layer 2 loops formed by an MCT pair, so Spanning Tree Protocol is not needed.

Westman replaced the Cisco switches in its Toronto data center and established a new data center in Chicago using Brocade MLXe Core Routers. The Brandon location connects to Toronto and Chicago over 10 Gbps connections.

Effortless Full-Scale Convergence

Johnston says that the Brocade MLXe Core Router's distributed processing architecture has dramatically improved BGP convergence performance.

"This BGP convergence is an order of magnitude faster than what we experienced with the Cisco 7600," he said. "At the same time, we achieved the functionality of a mixed Layer 2/Layer 3 platform while avoiding Spanning Tree Protocol and its pitfalls."

Simplified Network Administration

Westman's infrastructure is already IPv4-capable, and the company is in the process of rolling out IPv6. The Brocade



MLXe Core Routers in Chicago and Toronto are deployed with dual protocol stacking. Westman also has dual IPv4 and IPv6 protocols on all transit and peering connections, authoritative and recursive name servers, the mail system, and several management and LAN networks.

"I really like the fact that with the Brocade MLXe, I can have a single BGP peer group that contains both IPv4 and IPv6 peers," said Johnston. "I couldn't do that before, even though I do the same tasks for both sets of peers. Being able to manage everything out of one peer group is much simpler and saves time."

Open For the Future

"Having Software-Defined Networking (SDN) features on the Brocade MLXe platform was another positive check mark," said Johnston. "Again, it gives us more options and flexibility from a single platform and will likely be beneficial in the future."

The Westman team plans to deploy additional Brocade MLXe Core Routers

in a new Winnipeg data center. The new location will allow Westman to offload even more networking functionality from the Cisco 7600 systems, greatly reducing the number of routes backhauled to Brandon. Johnston says that the Brocade MLXe Core Router gives him the functionality and capacity he needs exactly where he needs it.

"The Brocade MLXe is a tremendous value," said Johnston. "We have faith in the platform, and we're going to deploy more of it for a highly resilient, robust network."

For more information, visit www.brocade.com.

Corporate Headquarters

San Jose, CA USA
T: +1-408-333-8000
info@brocade.com

European Headquarters

Geneva, Switzerland
T: +41-22-799-56-40
emea-info@brocade.com

Asia Pacific Headquarters

Singapore
T: +65-6538-4700
apac-info@brocade.com



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