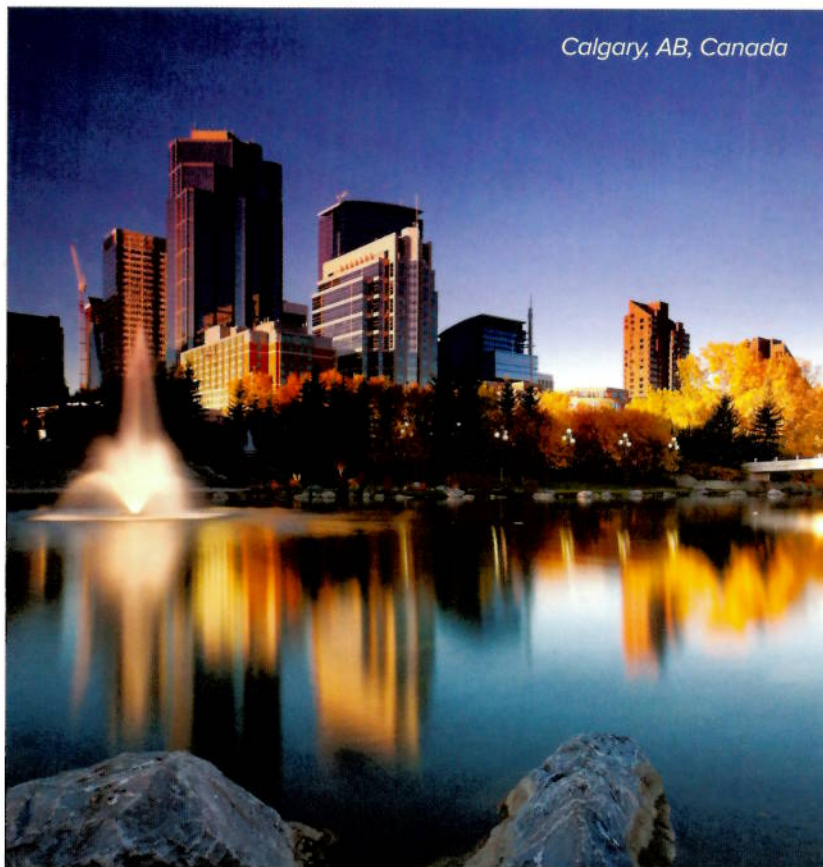


CASE STUDY



Innovation Agenda

Calgary keeps progressing with its new MPLS network.

Recognizing the critical role that technology plays in improving quality of life and supporting the economic development of a city, The City of Calgary is putting a major emphasis on innovation. Not content to sit on the sidelines and watch the world pass it by, Calgary has begun acting on a broad, forward-thinking vision to become an innovation leader and respond to the needs of its progressive citizenry.

"We've obviously seen the demand for IT services go up in the last decade, and we're assuming that curve keeps going," says Heather Reed-Fenske, Manager of Innovation & Collaboration for The City.

Calgary kicked off its forward leap with a core switch upgrade, which was completed in October 2011. The switch upgrade provided the foundation for the next items on The City's innovation agenda. The first of these steps was the implementation of a City-wide Multi-Protocol Label Switching (MPLS) network, a cutting-edge upgrade that dramatically improves City network capacity and communications speed.

With the future IP/MPLS network Calgary is putting in place, it can realize economies of scale and drive down costs. The upgraded network will also provide the level of security and reliability

The City needs to manage its mission-critical operations.

Forward Progress

Over the past few years, Calgary's existing network had started to show its age. Rapid increases in demand, combined with simple wear and tear, were stretching the network to its breaking point.

"We were definitely at end-of-life on our existing network infrastructure," says Doug Hodgson, The City's Chief Information Officer.

In consultation with Alcatel-Lucent, City officials put their heads together to determine the best way to make Calgary's network viable in the next generation of telecommunications. An MPLS setup, it was decided, would fit the bill. "We wanted to bring on a new state-of-the-art design," says Hodgson. "A new MPLS carrier-class network seemed to be the way to go."

The MPLS upgrade would provide several advantages over The City's current network. For one, it would greatly ease the strain placed on the network by years of escalating usage, which the old system simply wasn't equipped to handle.

"Fiber exhaust is always one of the issues when you own a fiber plant," says Dave Basto, Network Infrastructure Leader for The City. "Without a network to multiplex that traffic, you're always going to encounter it. This [MPLS network] will help us in that regard tremendously and allow us to expand our fiber plant more efficiently."

Core Strength

The primary phase of the MPLS upgrade was the creation of an MPLS core between The City's data centers, providing a high-capacity backbone to improve network redundancy and security. It was completed in June 2012. With it, says Hodgson, "we've really stepped up in terms of our capabilities around business continuity."

Until recently, all of Calgary's major data operations were housed downtown at City Hall — "not the ideal place to host a data center," says Hodgson. The creation of a new data center, away from the downtown

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core, made the upgrade to MPLS that much more attractive. Data can quickly travel between the centers, maximizing failover and disaster recovery capabilities.

"Getting this first phase done is quite significant for us, and really helps with our momentum going forward," says Reed-Fenske.

Future phases include, among other things, an expansion of the MPLS network along The City's fiber optic backbone which spans Calgary's geographic boundaries. Officials are excited about the improvements in communications, efficiencies and opportunities the new network will bring.

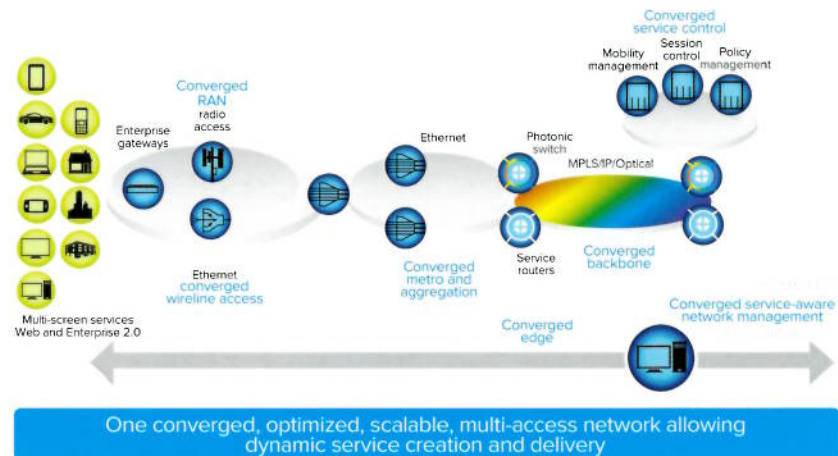
"Having an MPLS transport architecture allows for all our business units to operate on a common infrastructure even though they have separate networks," says Hodgson. "It allows our business units to connect more easily than they can today. When you have disparate networks, it's more difficult for information to flow between units."

MPLS also positions The City to effectively meet its future data needs. "There are some definite benefits in this shift in architecture for meeting future demands for video, security, operations costs and more," says Hodgson.

Savvy Thinking

A well-connected metropolis with a technologically literate citizenry, Calgary is determined to continue evolving to meet the demands and desires of its people. "Calgary's a very wired city. Our citizens are very tech-savvy," says Hodgson. "People expect our City to be wired."

More importantly, the future phases of the network will help City workers operate



more quickly out in the field, in turn making The City even more responsive to citizen needs. "Our business operations want to be able to work out in the community where citizens are and be able to answer problems, service requests, work orders, that kind of thing," says Reed-Fenske. "They want to have anytime, anywhere access, which in turns helps our citizens."

Delivering real-time applications is a priority today for The City of Calgary. Voice-over-IP (VoIP), video, social media, customer service and collaboration suites are fast becoming essential tools for users to interact effectively and stay engaged in the digital age. These next-generation applications require levels of performance from the network infrastructure far beyond the needs of typical networks in terms of throughput, latency and application awareness.

The Alcatel-Lucent Highly Leveraged Network (HLN) is an all-IP infrastructure that delivers very high bandwidth and a rich user experience for residential, business and mobile customers, and can

help operators monetize their networks more effectively.

Application fluency represents a unique approach to networking design. In Alcatel-Lucent's view, the application fluent network possesses broad knowledge of both network devices, end terminals and the applications to which they are connecting. Most importantly, the application fluent network understands the context of the conversation between device and application — and makes decisions based on that understanding.

This converged network brings significant benefits to The City of Calgary, including a high-quality user experience, lower network administration costs and a better return on investment (ROI).

Above all, City officials stress that implementing an MPLS network is about much more than saving a few dollars. "It's not just about looking to plateau our operating expenses," says Basto. "It's about building the capabilities we need to meet the current and future demand for long-term sustainability."

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