Vancouver Schools Improve Application Performance over the WAN

Silver Peak WAN optimization reduced bandwidth consumption by half and sped access to the cloud and real-time applications for 100+ schools

When the students in Vancouver, Canada found themselves waiting to load YouTube videos, the IT team at the Vancouver School Board knew there was a problem. Companies may normally block or deprioritize YouTube, but the popular hosting service contained essential educational resources used by the Vancouver students.

Adding bandwidth to the Vancouver schools was out of the question. The Vancouver school district was already connected by a 1 Gbps backbone with multiple service providers in the network, and any upgrade would take months or even years to complete due to complex changes required in the service provider network. Instead, the Vancouver School Board turned to Silver Peak, deploying WAN optimization appliances across 114 locations. The result: WAN traffic was reduced by more than half and IT regained visibility and control of the network.

"I can't live without the Silver Peak anymore," says Yves Bouchard, network architect and security analyst at the Vancouver

School Board, "not just to optimize traffic, but as a tool to diagnose and identify problems in our network."

The Vancouver School Board Network

Vancouver school district #39 is the third-largest school district in Canada, spanning more than 100 sites and servicing 60,000 users across 120 square kilometers. The majority of those locations are schools: 18 secondary schools equipped with unmanaged 100 Mbps connections, 92 elementary schools with unmanaged 10 Mbps connections, and 10 alternate sites with unmanaged 10 Mbps connections (see Figure 1).

At the time the Vancouver School Board first deployed Silver Peak, the sites were wired in a hub-and-spoke configuration using three local providers. Telus provided up to 1.15 Gbps of fiber to most locations and 3.5 Mbps DSL to an additional site. Radiant connected more than 30 locations with up to 390 Mbps, while Allstream
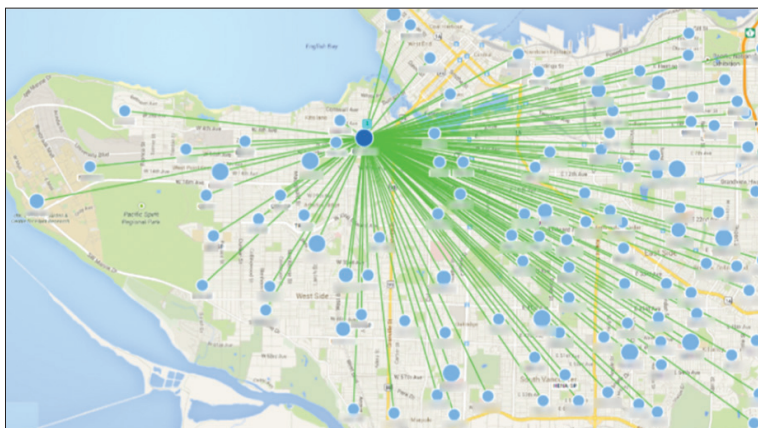
Customer: Vancouver School Board

Business Challenges
- Deliver responsive, online educational resources to students and faculty

Technical Challenge
- Oversubscribed backbone
- Mounting packet loss rates

Technical Background
- 120 sites
- Unmanaged 1 Gbps backbone
- Site bandwidth from 10 Mbps to 100 Mbps
- Diverse mix of applications

Silver Peak Results
- Overall traffic reduced by 55 percent
- CIFS traffic reduced by 81 percent
- Packet loss reduced by as much as 66 percent on some routes
- Significantly improved network management

Figure 1: The Vancouver School Network spans 120 sites throughout the city.

provided SHDSL or four bonded copper pairs to seven locations for up to 70 Mbps.

The Vancouver School Board network carries a diverse mix of traffic. British Columbia Enterprise Student Information System (BCESiS), online exams, educational videos and instruction, and more all require timely access to the Internet and to the cloud. File transfers run across CIFS, and LDAP and Radius are in use for directory services.

Over time, the students and faculty started to notice problems. The educational videos hosted on YouTube could not be reliably viewed. Teachers were unable to maintain and use personal web-sites in their classrooms. Exams normally taken online became delayed.

The challenge became obvious. "WAN congestion was our primary problem," says Bouchard. "We were running out of bandwidth at the schools, or so we thought."

How Silver Peak Helps

The Vancouver School Board addressed the problem with Silver Peak, deploying WAN optimization appliances across 114 of its locations. Bouchard found installation to be straight-forward, rolling out as many as eight appliances in just 6.5 hours.

With Silver Peak in place, Bouchard could see that the schools were trying to push too much data, as much as 2.5 Gbps, across the Telus one gigabit fiber backbone. Silver Peak addressed the problem with deduplication, eliminating 55 percent of the duplicate traffic from the WAN (see Figure 2). Traffic shaping allowed Bouchard to prioritize critical applications, such as Active Directory authentication, BCESiS, and online exams.
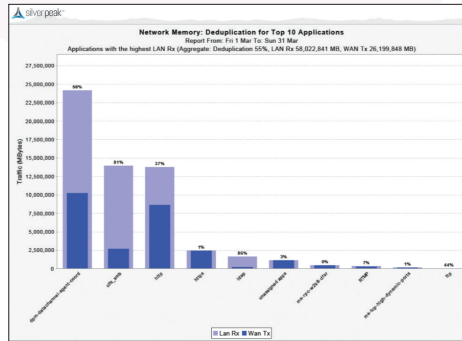

Figure 2: With Silver Peak, overall traffic was reduced by 55 percent.

And Bouchard automatically tackled network quality problems with Silver Peak's path conditioning capabilities. This allowed Bouchard to determine the ideal bandwidth across a connection, preventing network congestion that causes loss. "Our 10Mb Telus fiber link can be anywhere from 9.0 Mbps to 9.6 Mbps of actual throughput," says Bouchard. "With our Silver Peak WAN optimizers, we test the link to determine and the set the actual maximum bandwidth."

Packet loss rates were also increasing as a result of a bad SHDSL pair in the carrier's network. Allstream had used MLPPP to bond four copper pairs together to provide 10 Mbps connection. When one of those pairs started to fail, Bouchard could see the increased packet loss on his Silver Peak Global Management System (GMS) console.

"I was the one pushing our central IT team to tell the provider that there was a bad pair in their network," he says. "Silver Peak let me identify the problems before even the provider knew of them."

Bouchard learned what so many IT managers have found: Silver Peak not only improves network performance, it puts IT back in control of the WAN.

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