

Lethbridge School District – University of Lethbridge

Cybera/Seattle Internet Exchange (SIX) – K-12 Pilot – July 12 2011 – J. E. Percevault

Cybera Internet Service – “Better, Faster, Cheaper Internet

<http://www.cybera.ca/services/better-faster-cheaper-internet>

Cybera has established a peering connection with the [Seattle Internet Exchange](#) (SIX), which connects CyberaNet and its users to major Internet sites, such as Google, Microsoft, and YouTube. As a result, Cybera members will have a more direct connection to those sites and will be able to avoid queuing for access during peak use periods on the regular commercial Internet. Cybera’s partnership with [BCNET](#), the advanced network in British Columbia, allows Cybera to transmit members’ Internet traffic beyond Alberta to the SIX. Looking ahead, Cybera will be partnering with [CANARIE](#), Canada's Advanced Research and Innovation Network, to establish a peering connection with the [Toronto Internet Exchange](#) (TorIX). To take advantage of this transit exchange service, a connection to [CyberaNet](#) or to the [Alberta SuperNet](#) is required.

An example of CyberaNet at work can be viewed below. This network traffic map shows a live feed of the network activity between Cybera's transit exchange equipment in Calgary and the SIX in Seattle. This data shown in this traffic map is refreshed every five minutes.”

Membership

<http://www.cybera.ca/become-member>

“Membership terms run from April 1 - March 31. If you join mid-way through the year, the annual member fee is pro-rated. Member fees are organized into two tiers, based on the size of the member organization:

- *Less than 100 employees* \$1,000
- *More than 100 employees* \$5,000

If you would like to apply to become a Cybera Member, please complete our [online application form](#).

Member Benefit Highlights

- Access to expertise in cloud computing and other emergent technologies
- Internet cost savings and faster, more direct connections to major Internet sites like Google, Microsoft and YouTube
- Access to Alberta’s and Canada’s high-speed, high-bandwidth fibre optic networks as R&D test-beds . . . “

Lethbridge School District 51 Network

SuperNet service – fully meshed

- District 51 VPN
- Shaw Internet VPN
- GXVC1000 VPN
- Axia on-line bandwidth reporting tool to managed services (NOC, 2 high schools)
- NOC SuperNet Gigabit/200 – 188 bronze, 12 gold (no 30% bonus bandwidth); one-time gE infrastructure upgrade at \$27,000
- 14 schools – SuperNet 100/20 services – 22 bronze, 4 gold per school (includes 30% bonus bandwidth)
- 2 high schools – SuperNet 100/25 services – 28.5 bronze, 4 gold per school (includes 30% bonus bandwidth)
- 2 high schools – district Gigabit fibre to the NOC (equivalent infrastructure funding \$503.50 transferred to NOC headend bandwidth – per school, per month)

Shaw Big Pipe

- 60 Mbps FD, 5 year contract (\$500 per 10 Mbps per month)
- Shaw on-line bandwidth reporting tool – bandwidth utilization
- Bandwidth utilization – 56 Mbps between 0830 and 1500

Allot NetEnforcer AC-1400 – bandwidth shaping

- Service contract at 200 Mbps through put
- Rule 1: YouTube aggregate limited to 12 Mbps – i.e. 20% of Shaw Big Pipe
- Rule 2: All school subnets limited to 11 Mbps internet access; preserves 11 Mbps for headend services/servers (SIRS, Destiny, Exchange, SharePoint, TSC [HR, Accounting], Bridgit, Maintenance Connect, etc.)
- Bandwidth reporting and Internet services reporting/graphing in real time (note wireless internal VPN utilization trends 0800 to 0900 and 1200 to 1300)

District 51 Planning Variables

- Shaw Internet is maximized – option to procure more (\$500 per 10 Mbps per month)
- YouTube service is a complaint; more YouTube bandwidth is immediately consumed
- \$5,000 Cybera annual membership
- ***Additional NOC SuperNet VPNs for Cybera – one for SIX and the second for the research network) – note Cyber full gigabit Supernet service; routing implications***
- Allot shaping rules (how much to dedicate to YouTube etc. on Cybera SIX, begin a set of rule 3s to limit YouTube by school)?
- ***NOC bronze bandwidth allocation 188 Mbps: internet 72 Mbps (i.e. hairpin at 1.2 times 60 Mbps); how much to protect for headend services, how much to dedicate to Cybera SIX?***

Next Steps – July 14, 2011

July 13 conference call participants:

- Erwin Loewen, Alberta Education
- Jean-Francois Amoit, Cybera
- Wayne Johnston, and Bob Muir, Axia
- John Percevault, Peter Wickens, and Val Kissick, District 51

Routing requirement between Lethbridge School District and Cybera:

- Full BGP routing table
- 15,000 routes on the research network
- 25,000 routes on the Seattle Internet Exchange (SIX)

Requirement to apply on behalf of District 51 for an autonomous system number (as a prepend). Jean-Francois will forward application information to John. John, Peter and Val will complete the application.

Axia has requested a Visio drawing of the proposed network structure. Erwin volunteered to complete such.

District 51 sequence:

1. Autonomous system number application
2. Longview proposal on a Cisco router meeting the BGB routing requirement and then procurement of such.
3. Change order to Axia to add two additional Cybera VPNs to the District's headend.
4. Cybera membership at \$5,000 per year for District 51 and engagement of SAPDC in the partnership initiative – District 51
5. Joint configuration and testing on the new Cisco router of BGP route replication from Cybera to District 51 with assistance from Cybera and Axia. – District 51, Axia, Cybera

Validation of the preferred route to the Seattle Internet Exchange for identified services (YouTube, Google, Microsoft, etc.) – District 51

6. Analysis of network performance – Axia/Cybera VPN and Axia/Shaw Internet VPN. – Axia, District 51

Testing Rule3 implementation on YouTube allowable bandwidth(Allot NetEnforcer) for identified secondary schools – District 51

7. Exchange of information and lessons learned with Alberta Education, Axia and Cybera – District 51