Canadian University Creates Powerful Wireless Network

University of British Columbia implements wireless network to facilitate campuswide access and reduce operating costs.

EXECUTIVE SUMMARY

Customer Name: University of British Columbia
Industry: Education
Location: British Columbia, Canada
Number of Employees

BUSINESS CHALLENGE

- Provide more flexible network connectivity for students and staff
- Expand network coverage to include all indoor and outdoor campus areas
- Streamline network management operations for cost savings while improving security

NETWORK SOLUTION

- Standardize on Cisco solutions to create secure wireless network connecting all areas of two primary campuses

BUSINESS RESULTS

- Allowed students and staff to use any device to access network
- Expanded network connectivity to all indoor and outdoor campus areas of campus
- Provided students and faculty with instant, secure, and reliable online access to educational and research tools

Business Challenge

Catering to 54,000 students from 140 different countries, the University of British Columbia (UBC) is a bastion of higher learning in Canada's western region. UBC is one of Canada's leading research universities, operating major campuses in Vancouver and Okanagan and employing close to 10,000 faculty and research staff.

Providing students and faculty with instant, secure, and reliable online access to educational and research tools is paramount to the university's mission. With its expansive campuses that encompass more than 200 buildings, student dormitories, and outdoor spaces, connecting residents to responsive network resources is a challenge.

At both the Vancouver and Okanagan campuses, major areas such as classrooms, lecture halls, student dormitories, and other high-traffic areas can have more than 20,000 concurrent users on the wireless network at peak usage times during the business day. As an additional challenge, the configuration of these spaces is constantly evolving, as the university refurbishes older buildings and erects new facilities.

Students need remote access to the Internet more than ever to meet the rigors of their respective programs. Whether on a university-owned device or their own laptop or tablet, students are connecting more frequently from a variety of locations around campus using multiple devices. The increased network traffic is a strain on network capacity, which can degrade service for some users especially in popular student public spaces such as cafeterias and study areas. In addition, unique building configurations and interference from other electronic devices such as microwaves, cordless phones, and unauthorized access point (AP) installations, specifically in residential environments, can leave certain areas of campus with less than optimal service.

"Our campuses exhibit a unique mix of high-traffic and low-traffic areas, both of which need equally reliable wireless Internet service," says Michael Thorson, director of infrastructure at UBC. "We needed to develop a stable, yet scalable wireless infrastructure, capable of serving all existing areas of our campuses from a student's personal device or university-issued machine, and as well as any new spaces we build in the future."

Network Solution

UBC deployed a comprehensive Cisco® wireless network to simplify network management, support more flexible architecture for easier access, and improve network performance across campus. The wireless network is anchored by Cisco Catalyst® 6500 Series core switches, which offer a stable, scalable, and high-performance foundation for a borderless campus network to support thousands of concurrent users. To further expand network capabilities, UBC is also currently looking to deploy the next-generation Cisco Wireless Services Module 2 (WiSM2) controllers, which will greatly simplify the wireless core infrastructure and will result in an improved user experience, especially when user devices are roaming from one controller zone to another.

> "Centralizing command operations with Cisco Network Control System gives us a cost-effective and efficient way to help ensure consistent, secure network access to all our users anywhere on campus at any time."
> — Michael Thorson, Director of Infrastructure, University of British Columbia

UBC uses the Cisco Prime Network Control System (NCS) to manage the day-to-day operations of its network. Cisco NCS is the telecommunications and data services industry's most comprehensive management platform, delivering unified user, access, and identity management services and complete visibility into endpoint connectivity from a centralized location. "Centralizing command operations with Cisco NCS gives us a cost-effective and efficient way to help ensure consistent, secure network access to all our users anywhere on campus at any time," Thorson says.

Wireless access to both indoor and outdoor spaces across the campuses is delivered through 2700 Cisco wireless access points, which are currently managed with Cisco Wireless Services Module 1, Cisco 5800 and 4400 Series controllers. Cisco Aironet® 3600 Access Points with Cisco CleanAir™ technology help identify and troubleshoot sources of interference that degrade wireless services. Combined with Cisco 1500 Mesh Access Points for outdoor wireless coverage, the university has created a cohesive, secure wireless network, allowing students and faculty to access online applications from virtually anywhere.

> "Cisco technologies support WPA2 authentication enabling us to provide secure use of personal mobile devices such as laptops or tablets on the network and allow students to work where they want, when they want, and from whichever device they choose."
> — Michael Thorson, Director of Infrastructure, University of British Columbia

The wireless Cisco network helps UBC connect areas of its campus with wireless access that previously could not be reached with regularity. A comprehensive Cisco wireless network helps enable students, faculty, and staff to securely access school networks from virtually any device (laptops, tablets, home or school PCs, and others), whether it is a personal device or school-issued.

"Cisco technologies support WPA2 authentication, enabling us to provide secure use of personal mobile devices such as laptops or tablets on the network and allow students to work where they want, when they want, and from whichever device they choose," says Thorson. "With greater flexibility and better reliability, we can help students get the most from their educational experience without sacrificing the security and safety of the data on our network."

Students can now work wirelessly in the library, student union, and residence halls, but UBC also uses Cisco technologies to enable research staff at the Genome Research Centre, a leading genomics and bioinformatics research lab on UBC's campus, to work more efficiently and collaboratively with secure wireless access. The lab features a decontamination and containment facility that requires special permission to access, meaning that installing wireless access points inside was extremely challenging. Using the Cisco access points, the university mounted the access points in the floors above and below the containment facility, connecting all areas of the building without compromising safety standards or the integrity of the lab's environment.

Business Results

Standardizing on Cisco technology gives UBC an enterprise-grade, robust borderless network that enables students and faculty to easily access collaborative, research, and educational tools. The network infrastructure is lean and efficient, making it easier to manage using fewer controllers and simplifying overall network operations to lower total cost of ownership. "Deploying the Cisco network has reduced our hardware costs and improved our productivity."

More importantly, IT managers can help to ensure consistent uptime and network performance, leveraging deeper real-time visibility into endpoint connectivity and integrated troubleshooting tools to keep operations running smoothly. "Cisco NCS gives us a real-time, comprehensive view into network activity, including any issues at any location on or around campus," Thorson says. "Identifying these concerns remotely and deploying a fix proactively has helped reduce the number of incoming trouble ticket calls and virtually eliminated downtime for users who depend on the network for their studies or research."

PRODUCT LIST

Routing and Switching
- Cisco Catalyst 6500 Series switches
- Cisco 6500 Series Wireless Services Module 1
- Cisco 6500 Series Wireless Services Module 2 (WiSM2)
- Cisco Prime Network Control System (NCS)

Wireless Access
- Cisco Aironet 3600 Access Points with CleanAir technology
- Cisco 1500 Mesh Access Points
- Cisco 5508 Wireless Controller
- Cisco 4404 Wireless Controller
- Cisco Wireless Control System

With consistent service and reliable access, the Cisco wireless network has significantly expanded the opportunities that students and staff have for collaborating and exploring nontraditional classroom activities. For example, faculty can now use teaching platforms such as WebCT over the wireless network to provide an enriched learning environment or even give exams online to allow for maximum participation.

For students, the upgraded infrastructure makes meeting academic obligations a bit simpler. "Now, wherever they are on campus, students have online access to all the educational and research materials they need for their studies," Thorson says. "With Cisco CleanAir technology, we can keep our access points working without a glitch, so UBC users know that the speed of their connection will be consistent and support whatever device they're using, whether it's a laptop, tablet, smartphone, or desktop."

For More Information

To find out more about the Cisco Wireless Solutions, go to:

http://www.cisco.com/en/US/products/hw/wireless/index.html

Printed in USA

C36-701474-00 02/12