case study

Canada's Top Technology University Installs First 10 Gigabit Network Cabling for Multimedia Labs

Ryerson University (Toronto, Canada) has been one step ahead of technology ever since they installed their first IBM computer for direct access information system (dubbed "DAISY") in 1963. They've come a long way since DAISY as they are now providing multi-gigabit desktop capabilities to their media students in the Rogers Communications Centre.

Originally known as Ryerson Institute of Technology in 1948 and renamed Ryerson University in 2002, the institution was founded as an experimental postsecondary school for technical learning. It has stayed on the forefront of technological advances for all their degrees – varying from education to nursing to media arts. In 1992, the Rogers Communications Centre was opened to enhance educational and professional efforts in broadcasting, broadband, and new media technology in education. In this three-story, 140,000-square-foot structure are four TV studios, including the first three-camera HDTV television studio in a Canadian school, 40 audio production spaces, four radio production suites, five electronic newsrooms with over 120 seats, and multiple, multi-seat computer labs for visual computing and editing.

"We have an ever-expanding curriculum," states Dr. Paul Hearty, Ph.D., Director, Rogers Communications Centre and Associate Dean, Faculty of Communication & Design, Ryerson University. "To accomplish our learning goals, we need to stay on the leading edge of technology. We rely on our cabling infrastructure to give us the flexibility and the capability to allow this," Hearty adds. In doing so, the Rogers Communications Centre was recently recabled with Category 6 as the overall end-to-end cabling solution, with the addition of 200 drops of Augmented Category 6 cable and connectivity to deliver 10 Gigabit bandwidth capability to the video computer labs.

The Challenge

The Rogers Communications Centre is one of the highest usage buildings on campus. This facility is used 365 days a year, which includes subletting classrooms and labs to other area businesses off-season, allowing for a very small window of opportunity to replace the cabling. "Getting access into the building is a one-in-ten-year opportunity. Our objective was planning 10 years usage, so we needed to design and install the cabling plant in accordance with the academic plan," explains Bill Weekes, RCDD, Manager, Cabling Facilities, Computing and Communications Services, Ryerson University. "Because this building is used for radio, TV, journalism and image arts, our priority was to install the highest bandwidth, copper-based centralized architecture system available on the market today that would be scalable for tomorrow's applications."

"This was the first installation using Augmented Category 6 cable, and it became a learning experience and a springboard for future installations," states Barry Caverly, RCDD, Supervisor, Cable Facilities, Computing and Communications Services, Ryerson University. "Combining new cabling technology with a limited timeframe, made this installation a challenge in scheduling, as well as procedures. We wanted to make sure there would be no glitches with the products or the installation practices."

Criteria for Selection

The Rogers Communications Centre is built around an open atrium. With five existing telecom rooms – three stacked in the middle near the elevator and two stacked on the west side – removing previous cable and connectivity equipment included every flavor from IBM Type 1 to Category 5. For the backbone, they required redundant runs of fiber optic cable (both multimode and singlemode) to originate in the main computer room on the second floor and cascade to the other floors to provide connectivity for high-speed, high-bandwidth copper cabling to the desk through existing pathways. However, to feed Augmented Category 6 cable to the labs on the third floor, they would need to design and build a new telecom room on that floor for all the passive and active equipment.

Old methodology is taking fiber optic cable and distributing it in the key areas just to meet those bandwidth requirements. "We certainly thought about fiber to the desk, but felt this would not be cost effective," notes Weekes. "Because of the security, switches, environment and access to the cable, we had to select a horizontal cabling and corresponding connectivity that could easily be maintained. We could not justify the cost of maintaining a fiber optic to the desk system, as it becomes very costly when troubleshooting and upgrading, especially when we live in an Ethernet-based world, and there was a copper-based system available to take us through the next 5 to 10 years," he adds.

"We needed a robust system to handle video software programs, such as Maya®* Unlimited, Adobe® After Effects®**, Macromedia Studio, Flash, Animated Video production and playback software, just to name a few," states Bill Brishna, Lead Windows®^ NT Server Specialist, Rogers Communications Centre, Ryerson University. "We needed a flexible cabling system that could accommodate future software and hardware upgrades as they become available," he adds. The workstations in the imaging labs are mainly used to download and transfer high-bandwidth video. Each of the 200 lab workstations would have two 1 Gb/s NIC cards with the capacity to upgrade to 10 Gb/s within three to four years.

Why PANDUIT?

The *PANDUIT* end-to-end solution provided a total package for all Ryerson's cabling needs, encompassing fiber optic and copper closet equipment, as well as copper cabling to the desk. The verified *PANDUIT® TX6™ 10GIG™* Copper Cabling System assured that the installed network would have more than enough bandwidth to handle today's needs, as well as the next generation of broadband applications.

Breadth of Products and Availability
PANDUIT provided a wide range of integrated components for the Category 6 and Augmented Category 6 channel solutions – from cable to patch panels to ports. All *PANDUIT* standard products were immediately available from stock, which was critical to meeting Ryerson University's installation schedule.

Modularity and Flexibility
"The three labs were designed to be totally modular," states Michael Spencer, President, SpecTech, a technology consulting and project management company, who designed the layout. The *MINI-COM®* Modular Patch Panels and corresponding ports at the workstation outlets are interchangeable to allow a combination of multimedia cable types (copper or fiber) in the same patching field for a wide selection of applications.

Ease of Termination
"We had a compressed schedule of three weeks for installing and terminating the cable into the connectivity hardware and workstation outlets. This made it crucial that the new Augmented Category 6 cable would terminate as quickly as Category 6 – and it did," states Yves Thibodeau, RCDD, Senior Manager, Structured Cabling, Cygnal Technologies, a *PANDUIT* Certified Installer (PCI). At the workstation and in the telecom room, the *MINI-COM®* Modules simply snapped into the faceplates and panels in the front, providing easy accessibility and fast termination.

Reliability
All *PANDUIT* components are tested and verified to meet or exceed all current industry standards and proposed Augmented Category 6 drafts. Connectors and patch cords are 100% tested to ensure performance to the highest standards. *TX6™ 10GIG™* Augmented Category 6 Copper Cabling System exceeds the requirements of third-party testing by both ETL and Anixter.

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The PANDUIT Solution

There were six existing closets that were utilized as telecom rooms for the active switches and Category 6 data and voice for the 500 workstation outlets. A new closet was designed and constructed to handle the equipment and patching field for the Augmented Category 6 cable. Ryerson built an enclosed telecom room in a space that was previously a student lounge, located in the atrium area.

All passive terminations, as well as the active equipment, are housed in a *PANDUIT* 19" equipment rack. "With the vast number of cables terminated in each of the closets, we recommended both the *PANDUIT® NETRUNNER™* Vertical Cable Managers and *PATCHLINK™* Horizontal Cable Managers. This simplifies cable routing and provides proper bend radius which is critical for both Category 6 and Augmented 6 performance," states Tony Etherington, RCDD, Datacomm Specialist, *PANDUIT* Canada Corp. The flexible hinged covers on the *PATCHLINK™* Horizontal Cable Managers open from the top or bottom, and offer easy access to the cables for troubleshooting, moves, adds and changes. When closed, they provide added cable protection as well as a neat finished appearance.

The fiber optic cable from the computer room on the second floor core switch was terminated into the *PANDUIT® OPTICOM®* Enclosure to transition it to the local switches and the horizontal patching fields. The enclosures were equipped with *OPTICOM®* SC Fiber Adapter Panels for easy termination of both the multimode and singlemode fibers.

L to R: Bill Brishna, Michael Spencer, RCDD, Yves Thibodeau, RCDD, Bill Weekes, RCDD, Tony Etherington, RCDD and Barry Caverly, RCDD.

The *TX6™ 10GIG™* Copper Solution for the 200 drops on the third floor included the *MINI-COM® TX6™ 10GIG™* RJ45 Jack Modules with *TX6™ 10GIG™* Augmented Category 6 cable, which terminated in the *MINI-COM®* Modular Patch Panels in the telecom room, then routed into *MINI-COM®* 4-Port Faceplates at the outlets. "The Augmented Category 6 cable challenged the pathways," notes Thibodeau. "We had to compensate for the added cable width and weight. However, the *PANDUIT* patch panels, ports, and workstation outlets provided sufficient bend radius for the thicker cable," he adds.

The *TX6000™* Copper Cabling System for Category 6 voice and data for the remaining labs, classrooms, and offices was terminated to *PANDUIT®* Keystone *TX6™ PLUS* Category 6 Jack Modules placed in modular patch panels in the telecom rooms and in the faceplates and floor boxes.

"This system changed the way we are going to design from here on out," states Weekes. "The entire team, from the designer to the installer, has learned the best practices for an Augmented Category 6 networking system." For added assurance *PANDUIT* partnered with Cygnal Technologies, a *PANDUIT* Certified Installer (PCI), and through the *CERTIFICATION PLUS SM* System Warranty program, they provided a 25-year warranty.

"We know the system is working – there has been no negative feedback from the students and we've had no failures," Weekes notes. "Like most networks, the users expect it. Network success is measured by the lack of complaints, so in this case, that is the testimony," confirms Spencer.

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