Gigabit Student Housing: Olds College, Olds, Alberta, Canada

In this issue, **Broadband Communities** showcases Centennial Village and College Court Townhouses, two student residences at Olds College in Canada. This public college partnered with a private housing operator and a municipal service provider to deliver advanced internet services to students. Thanks to Nathan Kusiek, Chris Thompson and Daniel Andres of O-NET and Tanya Kure of CHOC for providing the information for this profile.

By Masha Zager / *Broadband Communities*

Olds is a small town in Alberta, about 60 miles north of Calgary and surrounded by farms and forests. However, it boasts the fastest internet service in Canada, provided by O-NET, one of Canada's few municipal fiber networks. Olds is also the home of Olds College, a two-year public institution founded in 1913 to teach farming and home economics. Though the curriculum has been brought up to date, the college still specializes in agriculture, horticulture, and land and environmental management. A fashion institute at its Calgary satellite campus serves as the modern-day equivalent of the old home economics program. Olds College is known for its emphasis on innovation, entrepreneurship and collaboration with industry partners in training students for workforce readiness.

A few years ago, the college decided to replace an aging dormitory with a new, state-of-the-art building that would house 450 of its 1,500 students during the academic year and host conferences and community meetings during the summer. In an innovative move, the college issued an RFP for a third-party provider to design, build, finance and operate the new building. The winner was Shunda Consulting & Construction Management, an Alberta-based company that had done business with the college for two decades. Shunda formed a subsidiary, College Housing Olds Co. (CHOC), to handle the dormitory project.

CHOC entered into a long-term partnership with the college and built the new building, Centennial Village, on campus. It also purchased College Court Townhouses, the other group of dormitory buildings remaining after the obsolete building was shut down. College Court was built in the 1980s and was still viable, but it needed renovation.

Centennial Village student housing at Olds College

Before designing Centennial Village, CHOC met with a focus group of students to ask what they would like to see in the new dormitory. A crucial requirement, the students said, was a good internet connection. In addition to having the usual level of interest in gaming and entertainment, the students had educational needs for internet access. Every student at Olds is issued an iPad, and class assignments usually have an online component.

After reviewing the available options, CHOC selected O-NET – which already provided internet service to the classroom and administration buildings – as the internet provider. "No one could come close to the level of service that O-NET could provide," says Tanya Kure, vice president of CHOC, "and we appreciate that they're a local community group. That made them even more appealing."

Nathan Kusiek, director of business development for O-NET, explains: "O-NET was the first company in Canada to offer gigabit residential and business service, and Olds College was the first college to have gigabit service. We wanted to ensure that students could maintain the same level of internet service at home that they had in class."

CHOC's decision to provide gigabit service to the new residence led to the decision to retrofit the network in the existing townhouses. This ensured that

PROPERTY OF THE MONTH HIGHLIGHTS
~ Centennial Village and College Court, Olds, Alberta ~

- First fiber gigabit-to-the-bed student housing in Canada
- Privately owned, on-campus housing served by municipal fiber network
- Service provided through fiber and fiber/Ethernet networks
- Vendors include Calix, Cisco, Cisco Meraki and Netgear.

"O-NET's superior level of service made us think about whether we should run fiber to every room and to the public spaces."

students could choose which complex to live in without basing the choice of accommodations on internet service.

Kure adds, "O-NET's superior level of service made us think about whether we should run fiber to every room and to the public spaces." In the end, CHOC designed the new building with fiber to each unit and used a hybrid fiber/Ethernet architecture for the College Court renovation. However, both offer gigabit service, and based on student feedback so far, the user experience in the two dormitories appears to be comparable.

VITAL STATISTICS

Property Description: Centennial Village is a new, 450-room residence constructed on Olds College campus. College Court, located on campus right next to Centennial Village, consists of 46 townhouses built in the 1980s. Each townhouse has four individual units and one common area and kitchen.

Demographics: College students and conference attendees

Greenfield or retrofit? Both

Number of units: Centennial Village has 450 rooms, and College Court has 184.

Style: Centennial Village is a four-story residential complex; College Court townhouses vary in footprint.

Time to deploy: Approximately six weeks from the point that the O-NET team began on site

Date services started being delivered: August 2015

Special requirements: Rooms such as student lounges and common areas had to double as conference meeting rooms during the summer. An open wireless network for guests and visitors had to support conference activities as well as students outside their units. O-NET recommended using fiber and managed Wi-Fi to future-proof the building.

SERVICES

Services offered: High-speed internet access with symmetrical gigabit speeds; video, phone, common-area wireless. The network also supports access control and building monitoring and control services.

Provider choice: College Court has connectivity to other providers, but because students pay for O-NET service as part of their rent, they have not opted for competing providers.

Technical support: Provided by O-NET

BUSINESS

Which parts of the network are owned by the service provider, and which parts are owned by the property owner?

Centennial Village:

- O-NET owns optical network terminals (ONTs), set-top boxes and other equipment in student rooms.
- O-NET owns and manages wireless access points throughout the building.
- O-NET owns optical line terminals, switches and other equipment required to operate services.
- CHOC owns fiber throughout the building.

College Court:

- O-NET retains ownership of the fiber ring that connects all the townhouses.
- O-NET owns ONTs, set-top boxes, and other equipment in student rooms.

Is there a marketing agreement with the property owner? Yes, an exclusive agreement

Does the agreement include an incentive such as a door fee or revenue share? No

How do the service provider and owner work together to market the services?

- O-NET and CHOC coordinate during student move-in and move-out dates to allow students easy subscriptions to add-on services (TV and phone) as well as equipment drop-off at the end of the semester.
- O-NET has members of its tech team on site during move-in to assist students with any technical issues or questions.
- O-NET helps provide documentation to allow CHOC employees to easily on-board students.

Some Centennial Village rooms serve as conference facilities.

Aerial view of Centennial Village (foreground) and College Court Townhouses (background)

Is there a bulk service agreement? Which services are included? Can residents upgrade from the bulk services? Yes, individual internet service of 1000 Mbps /1000 Mbps is delivered to each room with individual wireless networks. Students can add TV or phone services by contacting O-NET directly.

What is the take rate for non-bulk services? About 5 percent take TV services, and even fewer take phone.

Calix E-7 chassis

Network benefits: This was the first year for Centennial Village. Our belief is that the network helped attract students to the new building; however, we do not have survey data to prove this.

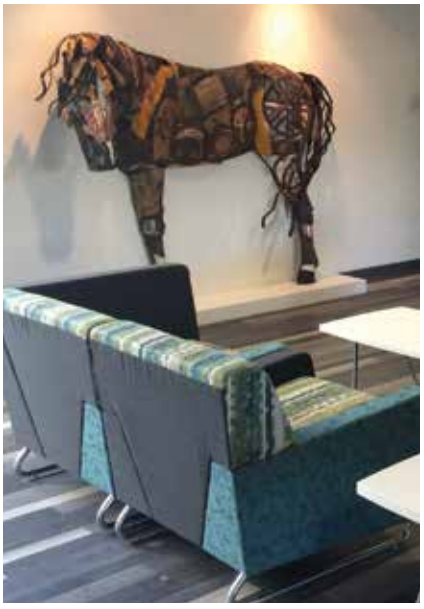
TECHNOLOGY

Broadband architecture: Centennial Village has fiber to each unit, and College Court has fiber to each townhouse block with Ethernet to each unit.

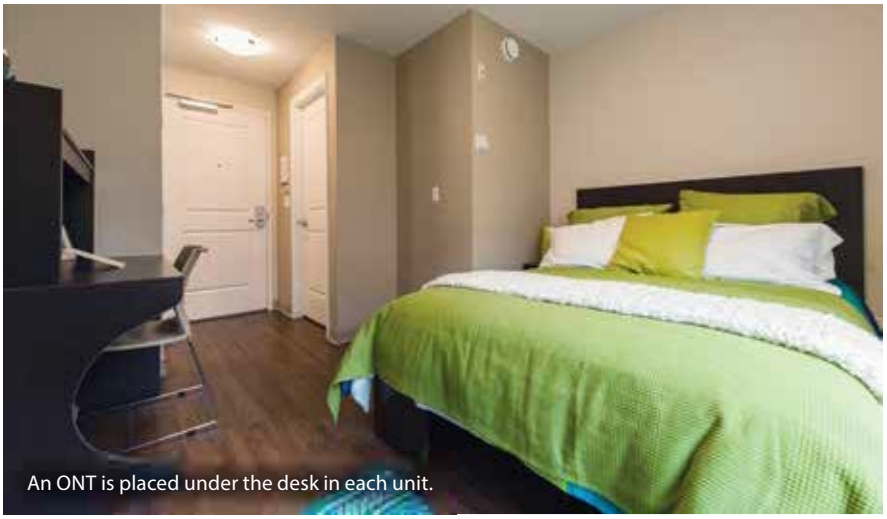
Where are ONTs placed? In Centennial Village, an ONT is placed under each desk with integrated 802.11ac wireless. In College Court, there is an ONT for every four units and an 802.11ac access point in the common area of each unit.

Technology used: GPON with a 1:16 split; CAT6 cable from the College Court ONTs to each unit

Calix GigaCenter



Common areas in Centennial Village all have Wi-Fi access.


An ONT is placed under the desk in each unit.

Methods for running cables: Fiber was trenched between College Court townhouses to connect them; in Centennial Village, fiber was run back from each room to GPON splitters in utility closets on each floor. Fiber was run from splitters back to the main utility room to connect to Calix E7 chassis.

Vendors/products used: All fiber optic equipment was supplied by Calix.

Centennial Village

- Two Calix E7-2 modular chassis with optical line cards (these serve both complexes)
- Calix 844G ONT in each unit
- Fifty-five Meraki MR-12 wireless access points installed throughout the building

College Court

- Calix 836 ONT in each townhouse block
- Calix 844E GigaCenter in each townhouse unit
- Common-area wireless is connected to a Calix 716 ONT through Cisco and Netgear Power over Ethernet switches.

LESSONS LEARNED

What were the biggest challenges? The GPON splitters were on back order and had to be shipped from overseas. The lead time was longer than anticipated, and the splitters arrived less than a week before students began the move-in process. Because the network couldn't be tested without splitters, O-NET installed the open (guest) Wi-Fi network first so students would be certain to have some internet access on move-in.

The Calix 844e GigaCenter used in College Court, which provides managed Wi-Fi from a wired Ethernet connection, was a newly released product and was received approximately two weeks prior to deadline even though it was ordered early. This is one of the perils of being on the "bleeding edge"!

The project was very large for a company of O-NET's size. The company normally does 700 to 800 ONT installations per year in town; this project required installing 500 ONTs in three weeks. In addition, installing ONTs under desks required sheathing the cable so students couldn't accidentally dislodge it with their feet or chairs. O-NET staff worked extremely long hours, and the company hired one or two extra staffers from another company to help with nontechnical aspects of the installation.

The overall deadline was extremely tight, and significant coordination was required among all contractors. Network installation and setup was not possible until the end of the project. Despite these challenges, CHOC and O-NET delivered a week early!

What was the biggest success? Centennial Village was the first project of its kind in Canada – full fiber-to-the-bed gigabit service. In addition, Calix Consumer Connect software allowed O-NET to efficiently provision, support and monitor the equipment. The College Court project meant that all on-campus students were guaranteed gigabit services. It was also the first North American deployment of the new Calix 844e equipment.

What was done to limit disruption? Some College Court units were occupied during the installation. Occupants were given 24 hours' notice prior to installers' entry into their units. O-NET recommends always having two installers in occupied units to minimize time spent in the unit and for accountability.

What feedback does management get, and how does that help them market or support these services? We learned that documentation on how to connect to the internet and whom to call when issues arise is important. Most feedback or tech support issues are related to user training. For example, some students were not aware of how to connect to their individual Wi-Fi service and were using the public wireless instead – and complained that the quality was less than advertised.

What should other owners consider before they get started on a similar deployment? Don't assume that all devices in a building can run wirelessly without ensuring that the building has appropriate wiring and equipment. Bringing in service providers to consult early in the process can save money down the line by avoiding change orders and retrofits. ❖

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