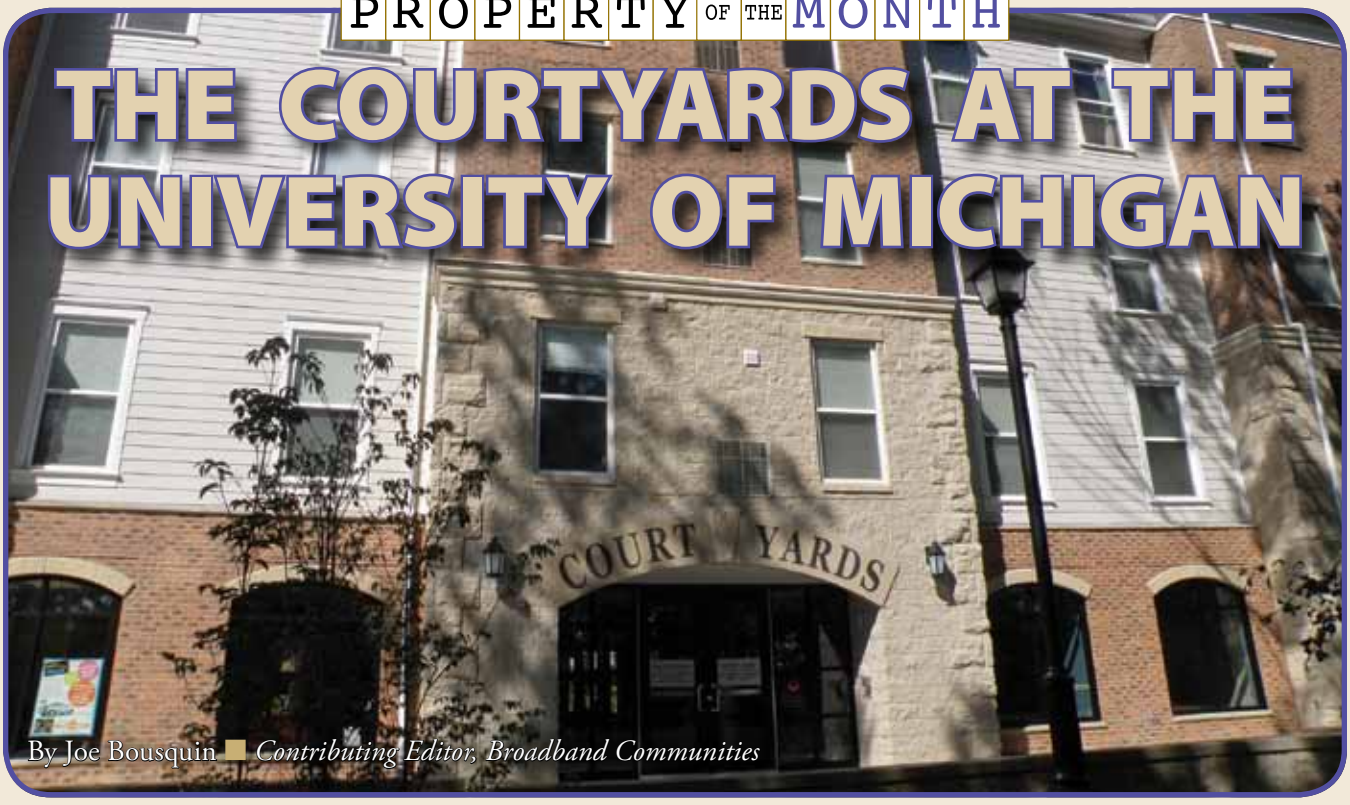
THE COURTYARDS AT THE UNIVERSITY OF MICHIGAN



By Joe Bousquin ■ *Contributing Editor, Broadband Communities*

This issue's featured property is The Courtyards, a 100 Mbps, fiber-connected student housing community in Ann Arbor, Mich., that stands out with an independent IPTV stream. **Broadband Communities** thanks Education Realty Trust's Susan Jennings and Scott Casey for their assistance in preparing this feature.

Scott Casey has seen the future of student housing, and it doesn't include subscription-based cable television.

"We've got properties that are subscription-based cable and ones that are bulk," says Casey, vice president of technology at Memphis, Tenn.-based Education Realty Trust (EDR), which owns or manages 34,000 beds in 10,500 units across 23 states. "If it's subscription-based and the kids have to go out and get it, they're just not doing it."

In fact, Casey reports, fewer students are showing up at school with TVs these days. Instead, roommates often coordinate to have one main television in a common area and use their own laptops for watching personal programming.

"They hang one TV on the wall so they can game or watch sporting events," Casey says. "Otherwise, they're in their rooms, watching TV on their laptops." Of course, all that individual watching can gobble up bandwidth quickly. "Student housing has been hit hard over the last year as video streaming has become more prevalent than ever," Casey says. "It saturates your network and consumes a lot of bandwidth."

In student housing, Internet video soaks up whatever bandwidth is available. To keep network traffic flowing, EDR added a separate IPTV stream accessed via Ethernet or Wi-Fi.

To keep Internet video from saturating the network at The Courtyards, a 320-unit, 896-bed community in Ann Arbor that serves University of Michigan students, EDR, together with the owner, decided to add an independently fed IPTV stream – even though the property already had standard cable television service.

EDR manages the property for owner Kensington Realty Advisors, which supported the idea. "Our residents are very sophisticated in their use

About the Author

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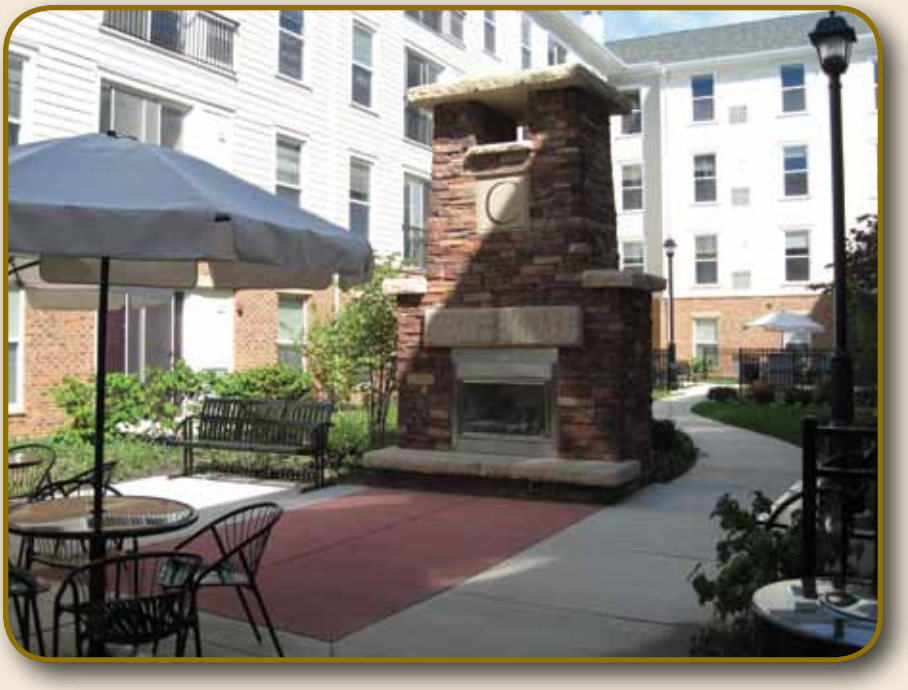

of technology, and we have a reputation of being ahead of the technology curve to accommodate their needs," says Jim Lee, senior principal at Kensington.

Although The Courtyard offers 100 Mbps data speeds to its residents over a fiber-to-the-building network – EDR has targeted a 100 Mbps minimum for all its communities – the IPTV stream doesn't use that bandwidth. Instead, it comes in through a separate feed routed separately to students' laptops or iPads over a hard-wired Ethernet or 802.11n wireless connection. The service is accessed via a channel-guide application downloaded to students' PCs.

In the future, a resident will be able to route the IPTV stream to a TV that has a Wi-Fi or Ethernet port or to a device such as a game console or a DVD player that can be connected to a TV. "HDTV is awesome to watch, and having more channels available whenever and wherever I am is very cool," says Brittany Smith, a University of Michigan student and resident of The Courtyards.

Champaign, Ill.-based Pavlov Media, which provides the other services at the property, helped EDR deploy the system, but the video signal is provided by a separate, third-party vendor, which has not been publicly identified because the system is still in beta test mode.

The IPTV headend has a much smaller footprint than a traditional video headend. "If you look at a typical video headend, you've got six racks and 96 receivers because you need one receiver per channel," Casey says. "With this deployment, the IPTV stream feeds the electronics in our MDF and IT rooms. You're looking at just a few pieces of equipment."

Less complexity also means lower cost. Providing IPTV programming represents a $30,000 to $40,000 capital investment, Casey says, compared with $50,000 to $75,000 for cable service, plus the necessity of fiber, Ethernet and coaxial infrastructure. That's why he believes that standard cable TV service could soon be supplanted by IPTV. "We're actually trying, to some extent, to get out of the cable TV business at some point in the future," Casey says.

For the students at the Courtyards, what's happening behind the scenes doesn't matter – they care about what they can access on their screens. So far, the deployment has helped in that regard, boosting The Courtyards' leasing velocity by 33 percent over last year.

"I call them the pampered generation," Casey says. "These kids don't care how it works or how much it costs. But they show up with every piece of technology and electronics imaginable, and they expect really high-speed Internet – as fast as or faster than they had at home with their parents and as fast as what they can get on campus."

With an independent IPTV lineup and dedicated 100 Mbps speeds to their laptops, EDR's pampered kids at The Courtyards are getting exactly that.

BASIC PROPERTY INFORMATION

Property description: The Courtyards, adjacent to the University of Michigan campus, offers park-like courtyards, a cybercafé, recreational facilities, tanning capsules, quiet-study and meeting rooms, high-speed Internet access, cable television, an outdoor badminton court, a mini-movie theater with surround sound and a music practice room with a piano.

Privacy is paramount – bedrooms are all single-occupancy, and each has

PROPERTY OF THE MONTH HIGHLIGHTS: THE COURTYARDS AT THE UNIVERSITY OF MICHIGAN

- *This large student-living community was built in 2008 by Kensington Realty Advisors and is managed by Education Realty Trust.*
- *Pavlov Media provides bulk 100 Mbps Internet access, delivered via fiber to the building, along with cable television service.*
- *IPTV service, added in 2010, is supported by a separate fiber-to-the-building infrastructure and accessed via Ethernet or Wi-Fi.*
- *Vendors include Cisco, D-Link and Ruckus Wireless.*

Students gather in the living room to watch the big game on a big TV. The rest of the time, they watch video on their laptops. Landline phones? Those are soooo 20th century.

its own bathroom. Convenience is maximized through access to city and campus transportation.

EDR developed the property with Kensington. EDR also manages it and provides residence life programming in concert with the university.

Greenfield or retrofit? Greenfield for data network, retrofit for IPTV

Number of residential/commercial units: 896 beds in 320 units

Building style: Three five-story, mid-rise buildings

Percent of units occupied: Planned 100 percent occupancy in 2011–2012

Time to deploy? 12 months

Date services started being delivered: The property opened in 2008. IPTV services became available to students in August 2010 for the start of the 2010–2011 school year.

TECHNOLOGY

The following answers were provided by EDR's Scott Casey.

How does fiber get to the property? AT&T brings a Metro Ethernet circuit to the headend in the building and hands it off to Pavlov Media, which provisions it to the property. We have fiber to the headend and fiber running between the buildings.

How is the signal distributed inside the property? Fiber is run through conduit from the main distribution frame (MDF) to each intermediate distribution frame (IDF). Cat 5e cable delivers the signals between the IDFs and each unit.

This is a pure Ethernet system from end to end. At each IDF, the fiber is connected to a D-Link DEM-310GT gigabit transceiver, which converts the signal so that it can ride over copper and passes it to our D-Link switches – we use the D-Link DES-3550, DES-3526, DES-3010PA and DES3627. Then a Cisco 3550 router provisions bandwidth to the units from the IDF closets via Cat 5e cable, which is home-run to the apartments.

The IPTV signal is an MPEG4 H.264 encoded IP stream delivered to the MDF room and then distributed via single-mode fiber optic cable to communications rooms throughout the community. At each communications room, the Ethernet signal is switched to Cat 5e cable. Students can access it via either a hard-wired connection or over Wi-Fi, using a channel-guide application that they download to their laptops. The exact configuration of our IPTV equipment is proprietary, and we cannot share it because of a confidentiality agreement with our vendor.

What type of gear is used? We use Cisco routers, D-Link switches and Ruckus Wireless access points. Pavlov Media is our partner for installation, setup and ongoing management of the network and cable system.

How did you deal with wiring and plug access within the units? The Courtyard has a gigabit backbone. For the original network, this was new construction, and all wiring was done while rough-in was completed.

How do you provide wireless signals within units? We have an enterprise-grade managed 802.11n Wi-Fi network using Ruckess Wireless equipment.

How much square footage did you have to dedicate to the network inside the building? We have a 10-by-10-foot space for the MDF, and each IDF is approximately 4 by 4 feet. We share space with other mechanical systems.

SERVICES

Does the building have triple-play services? No, we offer Internet and cable TV. Students can use VoIP in their units if phone service is needed, and they prefer that. We have stopped installing hard-wired Cat 3 or Cat 5 telephone lines in our buildings, as our student residents don't subscribe to landline service.

Are there technology amenities beyond triple play? Wireless is free throughout the property. We also offer study rooms, a movie theater and game rooms.

Are there IP-based systems for managing the property? We have an IP-based surveillance system that automatically captures a feed for all entrances and exits and is recorded for review in case of a security event.

Do residents have a choice of service providers? No

Who provides support? If residents have an issue or technical challenge, whom do they call? Our partner, Pavlov Media, offers 24/7 support.

BUSINESS

Who owns the network? Pavlov Media owns the network equipment during the term of the agreement.

Does the property owner have "skin in the game"? Who paid for what? Cabling infrastructure and the IPTV infrastructure are owned by Kensington Realty Advisors.

Was there a door fee? No

Are services automatically included in the rent? Standard cable service via Pavlov, IPTV via our third-party partner and Internet access are all included in the rent. Starting next fall, IPTV will no longer be included in the rent; students will have the option of subscribing.

If residents are billed directly, who handles billing and collection? Education

Realty Trust's management company, Allen & O'Hara Education Services, bills students and/or their parents directly.

Who markets the services? Allen & O'Hara Education Services

What has the return been on this implementation, in dollars or otherwise? We do not measure a financial return on the system. For us, as a student-housing operator, this is an amenity that is offered as part of the rent, and is simply a requirement for our residents. It's really about offering an all-inclusive technology solution. I think probably the biggest driver is the bandwidth and the wireless access that we've installed. The IPTV is kind of just icing on the cake because these kids judge you by what you're providing them.

I would say all that is helping increase our leasing velocity, but it's not the only factor – we've done a great job with marketing, and the property is still brand-new. It's a beautiful place to live. It's a great location. You walk out your front door, and you're almost on campus. There are a lot of other factors as well, but the technology is a big part of it.

ONSITE EXPERIENCE/ LESSONS LEARNED

What was the biggest challenge? Determining the amount of bandwidth needed today and provisioning for the future. We started putting in 1 gigabit ports, so you can start out with 100 Mbps and at any time you can turn it up to 200 or 500 Mbps. The challenging part is knowing when to say "Enough is enough" because if you put in 500 Mbps, they are going to use it.

Managing residents' expectations for Internet bandwidth is a daily challenge. The need for additional bandwidth changes every six months and is dictated by the technology and online requirements presented by our residents. Failing in this area could be detrimental to our future leasing.

One interesting thing we have found, however – and it's somewhat counterintuitive – is that when you give residents faster speeds, they don't consume as much of the bandwidth on a percentage basis. We think they're getting done [with their work] faster, so they're spending less time on the Internet. We've started increasing user speeds at all of our properties, and it's actually proven true.

You say you're trying to get out of the cable TV business. Could you explain? For the first time in 10 to 15 years, the cable TV industry is changing. For years, the cable companies were talking people into signing 15-year contracts with them, and that kind of thinking is over and done with.

We're always trying to look three years into the future for evaluating cable TV contracts. I want to write language saying that if we renew a contract that starts off as bulk, I have the ability to switch to subscription-based services at any time.

It gives us the ability to get out of the cable TV business if our residents aren't subscribing to it. If the providers want to come in and market to the students to subscribe, that's fine, but we're not owning the equipment, we're not paying a monthly fee for cable anymore. Personally, I believe IPTV has the potential to become the prevailing technology over the next few years, and I really believe that five years down the road, when we build a property, we're not going to put any cable headend in at that property.

What would you say to owners who want to deploy a similar network? Build for the future and don't let the vendors dictate what your network build should be. As I said on a panel at the Broadband Properties Summit in Dallas this year, don't let your vendors and developers tell you what you need. It's not that they have bad intentions, but they don't always have the technology or market expertise to know what you need for your residents. ❖