Pacific Park Deploys Fiber In the Apartment

Australian condo owners asked for fiber optic wiring all the way to the wallplate – fast, low cost and invisible. No, they weren't dreaming.

By Masha Zager ■ *Broadband Communities*

Retrofitting cable infrastructure in an apartment building can be a challenging job – particularly in an upscale condo where owners are as concerned about the quality of their hallways as they are about the quality of their TV pictures.

At Pacific Park, a 162-unit condominium in suburban Sydney, Australia, residents struggled with an obsolete coax network while the condo association (or "body corporate," to use the Australian term) searched for an upgrade solution that would preserve the building décor and aesthetics. Pacific Park was one of only a few large developments in the area without pay-TV service. The master antenna TV system that delivered free-to-air stations to apartments in the building was failing, and the controlled-access building security system and residents' telephone service were also performing poorly.

When the condominium hired Universal Communications Group (UCG), a leading Australian private cable operator, to survey the building's wiring, the news it received was less than comforting. Roger McArthur, general manager of UCG, explains, "We … discovered that it had been cabled with poor-quality, air-spaced coaxial cable in a looped topology, where cables ran in a daisy chain fashion from unit to unit." Giving residents the telecom services they demanded would require rewiring the entire building.

The condo owners association chose a fiber-to-the-unit solution to position the building for future services.

FIBER FOR THE FUTURE

UCG proposed two alternative solutions: a new, well-designed coaxial distribution system or a fiber-to-the-unit network. Pacific Park chose the fiber option.

The condo association found fiber more appealing because its bandwidth would position the building for a wide variety of future services, including both building automation and telecom services. However, the Australian National Broadband Network (NBN) project – which is rolling out fiber optic networks in Australia's metropolitan areas and wireless networks in the outback – made the fiber option at once more attractive and more problematic.

On the one hand, Pacific Park residents wanted to avail themselves of the 100 Mbps Internet service that NBN will soon bring to the Sydney region. On the other hand, NBN Co, the government-owned network operator, intends to deliver its services over dedicated fiber, and Pacific Park did not want to undergo a second fiber installation. Installing fiber twice throughout the building would incur the risk of degrading the property, according to McArthur. "There were real physical challenges," he says.

To address this issue, each unit was allocated an extra fiber for future NBN use.

Whether NBN Co will, in fact, use these fibers will become apparent when it deploys services to the suburb where Pacific Park is located. For the moment, however, fiber has been allocated for this possible future use.

DISTRIBUTING VIDEO

The immediate need for the new cabling was video. In addition to bringing in off-the-air channels through a master antenna, the condo association contracted with Foxtel, Australia's largest satellite TV company, to install a satellite dish and deliver pay-TV programming to residents. Thus, both off-the-air channels and satellite channels would be distributed over fiber.

To distribute the TV channels from the satellite headend throughout the building, UCG used radio frequency over glass (RFoG) technology, which transmits signals over the 1550 nm wavelength of fiber much as if they were

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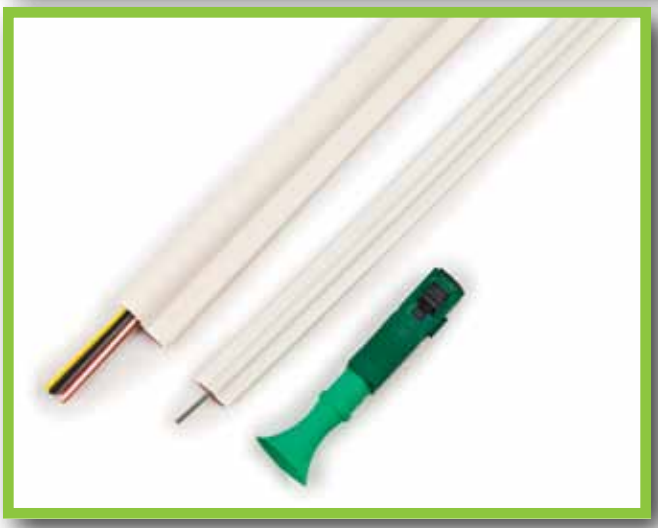
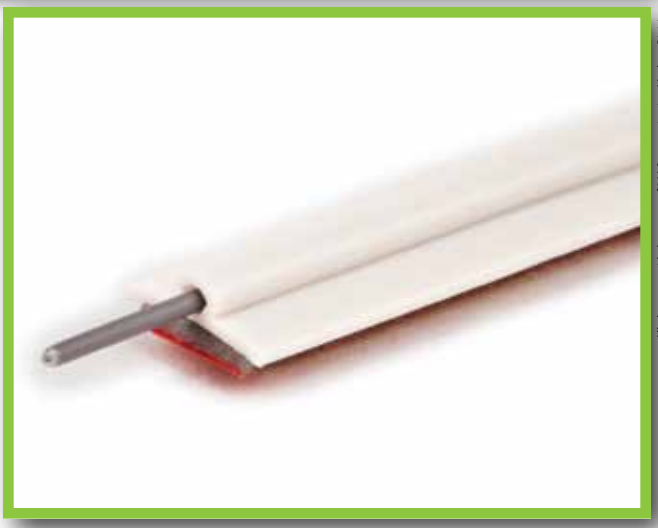


Together, the 3M One Pass Fiber Pathway hallway solution and the new One Pass Mini Fiber Pathway offer a total package for complete, cost-effective and aesthetically pleasing MDU fiber solution inside and outside the living unit. Both fiber pathway solutions include the field-terminated 3M No Polish Connector.



The One Pass Mini Fiber Pathway connects to a hallway distribution cable and is routed inside a living unit to a wall outlet positioned near an ONT. The One Pass Mini uses exclusive 3M adhesive technology that ensures reliable installation on a wide variety of surfaces, even painted or sealed concrete where stapling cables isn't an option.

All photos provided courtesy of 3M Communication Markets Division

traveling over coax. Fiber was routed to each floor through risers, using a vertical fiber distribution system from TE Connectivity.

The short horizontal distances from the risers to residents' TV sets posed the greatest challenge. In a typical fiber-to-the-unit installation in a high-rise building, fiber is routed down hallways in conduits or behind moldings and terminated just outside or just inside each apartment; video signals travel from the network interface device over coaxial cable to wall outlets. In Pacific Park, however, the condition of the coax wiring inside the apartments was just as poor as the wiring in the risers and hallways, and it could not be reused. The requirement to transmit high-bandwidth RF video signals precluded using other types of existing wiring, such as power line.

The condo association specified two video outlets in each apartment – one in the living room and one in the main bedroom. Thus, the solution that made the most sense was for UCG to bring two fibers all the way into each apartment – one to each video outlet – and use a micronode, or media converter, at each outlet to convert the video signal from RFoG to RF broadcast. (This does not include the fiber allocated for possible future NBN use; in addition, there are some spare fibers on each floor to allow for extra TV outlets.)

BUILDING A NEW PATHWAY

In addition to having no usable wiring, the building had no conduits or other pathways through which fiber could be pulled, either in the hallways or inside apartments. UCG considered a number of potential solutions, including a skirting board system, removal and replacement of the ceiling cornice and various PVC trunking options. Pacific Park rejected all these options because they were either too unattractive or too expensive.

The problem was solved only when UCG learned about the 3M One Pass Fiber Pathway and One Pass Mini Fiber Pathway. The One Pass Fiber Pathway is an adhesive-backed, surface-mounted,

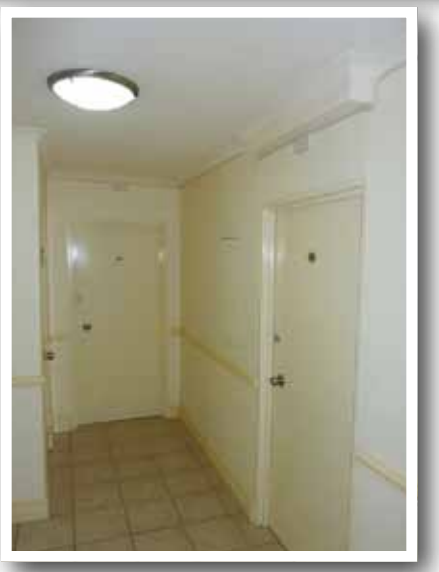
This drop-cable solution allows for quick, easy installation.

An adhesive-backed cable pathway is low-profile and unobtrusive.

horizontal cable pathway and drop cable solution that can be installed in a single pass around a hallway perimeter. Designed for use in brownfield MDUs, the pathway adheres to a variety of wall surfaces and is paintable.

The One Pass Mini Fiber Pathway is an extension of the hallway solution designed to let service providers take fiber into living units. Like the Fiber Pathway, it bundles the pathway and the fiber as a single package. But although the Fiber Pathway is loaded with six or 12 fibers, each Mini Fiber Pathway contains a single fiber. The solution uses ultra-bend-insensitive fiber capable of maintaining a 5 mm bend radius, which allows it to turn sharp corners with no performance loss.

UCG installed samples of the One Pass Pathways in a common area of the building for residents to preview, and the building owners approved the solution, along with 3M's Fiber Distribution System 8400 Series terminals, which were used to transition from vertical to horizontal fiber.

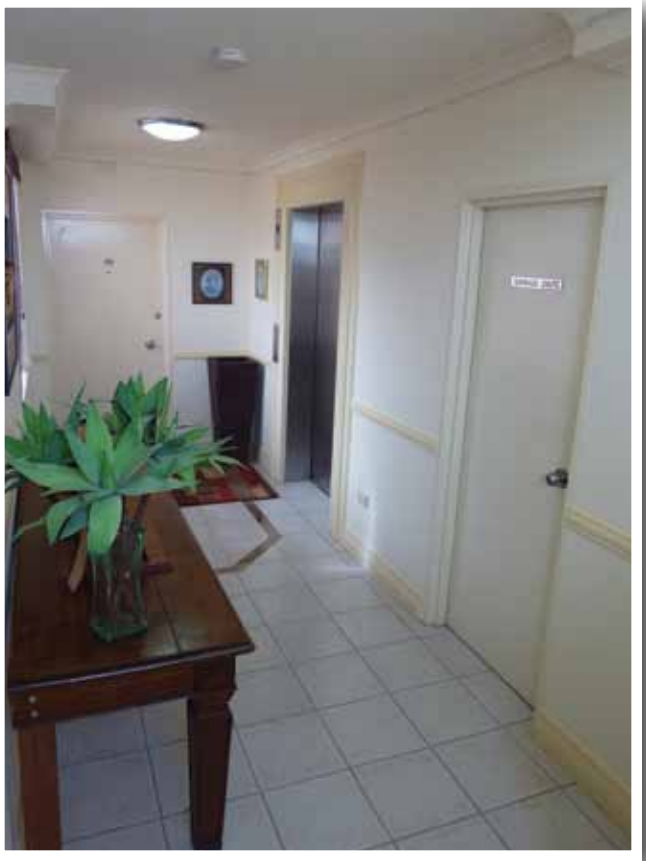


The One Pass Fiber Pathway installed in the Pacific Park condominium is close to invisible.

After a day of training with 3M technical service reps, UCG technicians installed 5,100 feet of One Pass Fiber Pathway duct in the hallways and 23,000 feet of One Pass Mini Pathway duct in living units. The installation was completed in five weeks, and labor costs were much lower than for other proposed deployment methods. According to McArthur, "Unit installations were kept to between two and three hours per unit, providing predictable installation windows for residents. Using other methods, the current complex build would have taken at least twice as long."

A 'VERY PLEASING' RESULT

The pathways were installed flush against the ceiling cornices in both the hallways and living units. The building has since been painted, and the pathways are barely noticeable. "The result is very pleasing, and our client is pleased with it," McArthur says. He adds, "3M has provided a solution for our client where previously we had no acceptable solution that met the aesthetic requirements of the building."



UCG technicians easily installed 5,100 feet of duct in the hallways and 23,000 feet in living units after only one day of training.

The 3M One Pass Pathways carry fiber down hallways and into living units with a minimum of fuss.

As one of the first deployers of the One Pass solution, UCG had the opportunity to work with 3M to refine the product. Several of its recommendations, based on feedback from its installation experience, were adopted. In particular, UCG helped 3M develop lower-profile corners as well as methodologies to ease the routing of fiber around corners. In addition, UCG developed methods to repair the One Pass Mini – a requirement that McArthur calls "critical in an operational environment."

The network, which went live in February 2011, currently delivers excellent TV service. Pacific Park is now considering implementing an IP-based access control and security system over the same wiring. Additional applications may be added in the future as needed – and, according to McArthur, the network's optical link budget can easily support an upgrade to full PON services at a later date if required.

McArthur is particularly pleased with the One Pass solution, calling it "very effective, with a very minimal visual impact and, again, fast to deploy in a unit." Because the One Pass was successful in Pacific Park, he says, he plans to use it again in buildings where cable pathways are not available. ❖