

High-Speed Broadband for MDUs: A Look at Today's Options

New solutions promise faster installation of high-speed broadband in MDU buildings.

By Joan Engebretson

As bandwidth needs continue to multiply, consumers demand faster and faster broadband speeds. That holds just as true for those who live in multiple-dwelling-unit buildings (MDUs) as it does for those who live in single-family homes.

Previously constructed MDUs, also known as brownfield buildings, almost certainly have twisted pair wiring that can support internet connectivity via DSL. But increasingly, customers are looking for faster speeds. MDUs wired for cable TV service are likely to support faster broadband, but as Kevin Morgan, chief marketing officer for fiber connectivity manufacturer Clearfield notes, the hybrid fiber-coax (HFC) infrastructure supporting cable TV service may be quite old and not in prime shape. The upshot is that even where a cable provider is present, competitive broadband providers may consider deploying service in condominiums, apartment buildings or complexes.

Landlords, condo homeowners associations and service providers considering the MDU market have several options for bringing high-speed broadband to units within buildings, including making fiber available to individual units and using alternatives based on structured Ethernet and Wi-Fi.

Jay Bestermann, senior director of managed networks for connectivity product supplier CommScope, notes that MDUs today are likely to have fiber connectivity to the building. And that eliminates one step a service provider would need to make to support high-speed

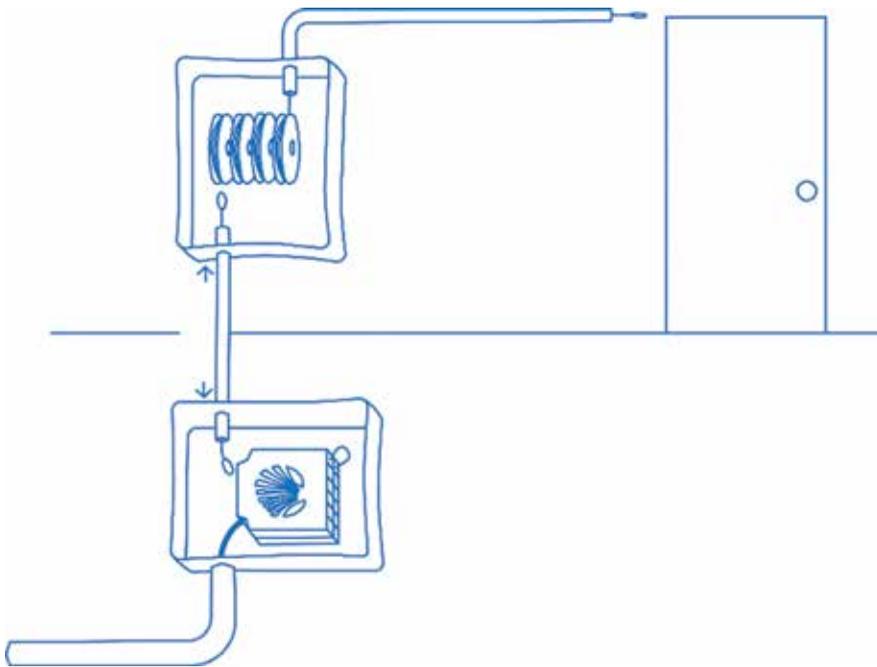
broadband within a building, no matter which item is chosen.

THE FIBER OPTION

A 2016 study conducted by research firm RVA, LLC for the Fiber to the Home Council (now the Fiber Broadband Association) found that fiber broadband connectivity can increase MDU owners' and operators' net income per average unit by as much as 11 percent and can increase the market value of rentals in MDUs by 8 percent. The value of a condominium in an MDU increases by 2 percent when the condo has fiber connectivity, the survey found. All those percentages are likely higher today, as broadband has become increasingly critical to daily life.

Despite these numbers, only about 50 percent of MDU deployments involving new construction – also known as greenfield deployments – were installed with fiber to the unit as of 2016, according to Christy Johnson, market development manager for Corning, whose product portfolio includes fiber connectivity equipment. That percentage undoubtedly has increased, however, and may be closer to 100 percent than 50 percent today, Johnson notes.

When service providers talk about deploying fiber within an MDU, they generally are referring to the same passive optical network (PON) technology that underlies fiber-to-the-home and fiber-to-the-premises deployments. As with traditional PON technology, a single fiber connects a service provider's network to a splitter, from which individual fibers are run to



Clearfield's FieldShield Drop Wheels and protected pathways

individual apartments or condos.

When a service provider considers deploying fiber within an MDU, accurately estimating take rate is critical to determining project profitability. Typically, a potential provider can gauge interest level through marketing efforts, such as distributing flyers throughout the property.

"An MDU is expected to be more profitable" than a single-family home, observes Morgan.

He notes that some MDUs may have businesses located on the

ground floor, which generally makes it attractive for a service provider to deploy fiber within the building.

Johnson notes that providers also may be able to maximize profitability by considering other sources of revenue that a fiber installation might generate, such as supporting cell site densification or rooftop antennas. Some service providers may have their own wireless businesses; others may be

able to provide fiber connectivity on a wholesale basis to other providers.

Even a cable company may consider deploying fiber within an MDU rather than using traditional HFC infrastructure, Morgan notes.

With HFC infrastructure, fiber from a service provider's network feeds coaxial distribution connections that ultimately support coaxial connections to individual customers. With PON, these feeder connections are fiber, which carries more data than coax, Morgan notes.

Another concern is that because HFC originally was designed to send video programming to end users, its bandwidth is asymmetrical, supporting higher bandwidth downstream than it does upstream. And internet usage also traditionally was asymmetrical, with more traffic flowing to users than coming from them, but that pattern is becoming less pronounced as uploading and videoconferencing/video calling become more popular. PONs also may be asymmetrical, but upstream and downstream capacity are closer to being equal and in some cases are equal.

Morgan also argues that fiber is more reliable than coax and is "more efficient for interconnecting cable TV or phone companies that are consolidating with geographically adjacent companies."

Service providers choosing the PON approach may consider not running



The Clearfield Drop Wheel



Corning's Clear Track is designed to look like decorative molding. It holds fiber cabling inside.

fiber into every unit initially, doing so only when a customer orders service.

“They might take fiber down the hall and past every unit,” comments Johnson. “Later, if they have the third or fourth customer on a floor, they only have to enter into the apartment.”

In other cases, a service provider might run fiber only to the communications closet for each floor and do the hallway later.

Approaches such as these minimize upfront costs, but service providers need to ensure that they don't lose those savings later because the process of adding new customers later becomes overly complicated.

Fortunately, cabling vendors have developed some innovative products for the MDU market, including some aimed at enabling subsequent customers to be added in an efficient manner. (See sidebar.)

STRUCTURED ETHERNET

As an alternative to PON, some service providers and landlords or homeowners associations opt to deploy structured Ethernet within an MDU – one of several broadband connectivity areas that CommScope specializes in. Typically, CommScope deploys structured Ethernet throughout an MDU in what Bestermann calls a “whole property” or “bulk service” approach. Most commonly this is done for greenfield installations.

As Bestermann explains, this approach typically is supported by a gigabit per second (Gbps) or 10 Gbps connection to the building, with fiber or coax extended to individual units, where a gateway provides connectivity via wired Ethernet and/or Wi-Fi. From a technology standpoint, it's similar to what might be installed in an office building.

One advantage of this approach is that gateways can be installed in public areas of an MDU, such as in fitness rooms or at a swimming pool, and residents can connect easily via Wi-Fi when they are in those areas.

A service provider choosing this approach can market directly to individual units or can sell connectivity for the whole property to the property owner, who can then determine how to charge end users, Bestermann explains. When the service provider offers service to individual units, it may opt for a “service left in place” approach in which the service provider doesn't expect to get gateways back from customers when they move. When a new resident moves in and signs up for service, the service provider doesn't have to roll a truck to onboard the customer but instead may simply have to reset the gateway.

The systems that CommScope installs are engineered to support a minimum of 25 Mbps per device – a different approach from PON, in which each housing unit gets a specific amount of bandwidth.

The per-device approach offers more flexibility, according to Bestermann.

“I might have 10 to 20 devices and can get high bandwidth to every device,” he explains. “In the home, it's a shared model.”

The 25 Mbps-per-device target is the “bare minimum” that CommScope recommends, notes Bestermann, who adds that CommScope is seeing demand as high as 200 Mbps per device in student housing.

COOKIE CUTTERS WON'T WORK

MDUs come in many shapes and sizes – from garden apartments with just a few stories to high-rises with hundreds of units – which means that a cookie-cutter approach to MDU broadband connectivity won't work. Fortunately, suppliers have applied considerable creativity toward developing solutions to meet a wide range of MDU connectivity needs. ❖

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INNOVATIVE CONNECTIVITY OPTIONS

Companies that offer cabling products – including Clearfield, Corning, CommScope and others – have developed some innovative offerings for MDUs.

For example, both Clearfield and Corning have considered the unique needs of brownfield installations, where space for extra equipment and cabling may be scarce.

Corning's ClearTrack offering resembles decorative molding but has space inside for fiber cabling. It can be installed where walls meet the ceiling, where few would guess that it was part of a broadband network, Johnson explains.

Clearfield's FieldShield Drop Wheels are compact spools stored in the communications closet on which fiber bundles are wrapped, saving space in comparison with traditional alternatives. The drop wheels also offer service providers the option of minimizing upfront costs by beginning with partial installations. The drop wheels keep unused fibers neat until they are needed, in which case individual fibers can be unspooled as needed. The company also offers FieldShield microduct that can be pre-installed and houses fiber that can be pulled or pushed through it. That approach can minimize deployment costs by enabling a single technician to add the fiber, Morgan notes.

Corning's IBwave FiberPass software streamlines the installation process by reducing the time required to do site surveys and design systems.

CommScope's Ruckus product line also includes offerings tailored for the unique needs of MDUs. For example, the Ruckus Fiber Backpack is designed to simplify Wi-Fi deployments for fiber-ready MDUs. The device easily attaches to the company's Ruckus H510 wall-mounted indoor Wi-Fi access point/switch and helps provide a better-looking installation by eliminating wire clutter.