

# Broadband Access Extension Technologies Will Help Solve MDU Connectivity Challenge

Emerging fiber-extension technologies that leverage existing MDU wiring enable service providers to deliver high-speed broadband to tenants.

By Herman Verbueken / *Broadband Forum*

**N**ext-generation fiber technology has already been widely deployed, and many locations are seamlessly, swiftly and relatively inexpensively served by fiber. However, offering reliable, unfailing broadband access to multiple dwelling units (MDUs) remains challenging.

For buildings such as apartment complexes and hotels, operators face considerable headaches as they look to address the additional complexity and costs involved. With the global pandemic placing operators' fiber-to-the-premises (FTTP) strategies under further scrutiny, the difficulties of installing costly fiber to multiple tenants or workers within a building comprising different offices, rooms and apartments can prove insurmountable.

Across the Americas and Europe, many populations still reside in MDUs, and their quality of everyday life often depends on their ability to relax, communicate and work comfortably and efficiently. Fiber needs to be pushed further into the network, but the size of MDUs can often be a problem. The approvals process with apartment owners and tenants can be time-consuming, and the disruption during fiber installations can be a significant hurdle.

If the take-up rate is low for these new services when the fiber is installed, the sheer costs can prevent operators from proceeding.

Therefore, single-family units (SFUs) are much more attractive for operators because profitability will be higher and installations will be more straightforward. Consequently, global operators are turning to other solutions in the marketplace to help navigate this problem, which is no surprise. As operators continue to provide multi-gigabit broadband to their customer bases, fiber-to-the-extension-point (FTTep) architecture can deliver the service needed quickly instead of installing FTTP, digging up roads, or pulling cables to every home.

## **FTTEP CAN BE THE ANSWER**

MDUs are considered underserved and could be served more effectively by FTTep. In essence, the apartments within an MDU can be reached by fiber technology, but the last few hundred meters can be served over phone lines, coax cabling or radio. These complementary access technologies offer low latency, low jitter and quality of experience equal to that of fiber. When installing fiber near customer premises, the last few hundred meters can serve only a limited number of customers, and there are several issues to face, including high costs and securing permissions from tenants, building owners or local governments for civil works.

FTTep can provide the same gigabit and multi-gigabit speeds as fiber and avoids the need



for technicians at the premises to install cabling and equipment inside or near buildings for multiple living units within an MDU. An FTTP architecture sees an optical signal converted to electrical signals traveling over the likes of phone lines, coaxial cabling or radio. It enables sharing fiber among an increased number of customers.

In FTTP deployments, fiber runs from an optical line terminal (OLT) to an optical network unit (ONU), usually located on the outside wall of a building. The Ethernet signal travels from the ONU to the residential gateway inside the home. However, with FTTP deployments within an MDU building, fiber runs from the OLT to a distribution point unit (DPU) in the basement or outside the building. It is transmitted over existing wires at the premises using copper-based technologies such as G.fast, G.hn Access and MoCA Access.

### COMPLEMENTING FIBER OFFERINGS

In MDUs, operators can utilize the likes of G.fast, G.hn Access, or MoCA Access and use existing coaxial or phone line infrastructure to bring fiber connectivity from a DPU to each floor of a complex or building. Operators seeking to deliver gigabit speeds to all customers find it is simply impossible to do in some locations.

“TR-419 Fiber Access Extension over Existing Copper Infrastructure

Issue 2,” Broadband Forum’s technical report, explores integrating complementary copper technologies, such as MoCA Access, G.fast and G.hn-based Access. By harnessing the copper infrastructure, operators can roll out future-proofed, fiber-grade services to homes and businesses quickly and cost-effectively. This is a viable alternative to installing fiber, which may not always be economically or physically feasible in MDUs, without sacrificing quality.

Service providers and telecom operators can realize more-economic deployments less likely to be hampered by extensive construction work by integrating these complementary copper technologies. They can deliver ubiquitous connectivity to all corners of customers’ apartments and offices in such MDUs as hotels or apartment complexes. Point-to-point (P2P) and point-to-multipoint (P2MP) infrastructures ensure that residential and business end-users can access multi-gigabit services.

### MDU INDUSTRY COLLABORATION

The collaboration in the Broadband Forum’s PHYtx Work Area among industry associations, such as HomeGrid Forum and MoCA, ensures that service operators can remain ahead of their customers’ demands with these cost-effective deployment options and managed services. Broadband Forum’s

TR-419 work is technology agnostic, allowing service providers to choose the most appropriate technology for each deployment.

TR-419 defines alternative and complementary architectures for extending fiber networks, simplifying the rollout of symmetric and asymmetric multi-gigabit services, and facilitating seamless fiber deployments. The report also describes a number of use cases and migration options that can be representative deployment scenarios for operators choosing to implement an FTTP solution. Industry collaboration gives operators more choice to roll out high-bitrate services quickly, reducing the need to bring fiber into the home.

As connectivity in MDUs continues to be a significant challenge for operators, leveraging copper-based access technologies to complement their existing FTTP offerings can deliver the high-quality, reliable broadband that people in every apartment, office or home desire. ❖

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