

MDUs: Don't Let the Gigabit Revolution Pass You By

G.fast can help broadband service providers reach challenging brownfield MDUs by cost-effectively bridging the gap between unreachable homes and FTTH networks.

By Zsolt Adamy / Nokia

One remaining frontier for fiber broadband is the multiple dwelling unit (MDU). Customers in MDUs risk seeing the gigabit revolution pass them by as fiber is laid *past* their buildings, not inside.

Service providers' customers say about 20 percent of MDUs in their service areas cannot be fiberized. That's because the wide variety of MDUs creates real challenges for getting fiber to MDU apartments – not to mention the cost, complexity, and sometimes even social and legal barriers to installing new cabling. MDUs are home to around 44 million households in the U.S. alone. Fiber is unavailable to about 20 percent of those households.

Customers are not the only ones frustrated. Governments and regulators want to see fiber reach everyone. Broadband operators also wish to do it, with the added incentive of securing their customer base, locking out competitors, and increasing their revenues.

Even in old MDUs, G.fast is a technology that runs over in-building wiring, whether coaxial or copper twisted pair, serving each home. It delivers broadband speeds on a par with pure FTTH.

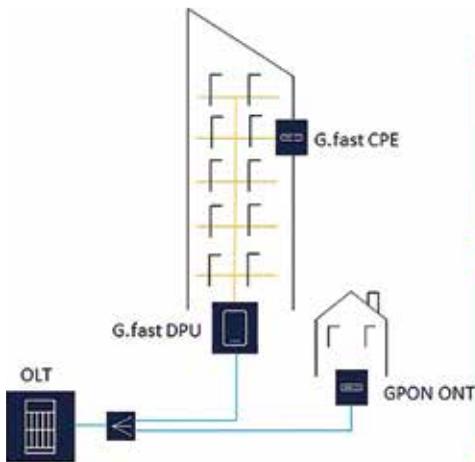
BROWNFIELD MDU CHALLENGES

Fiber extension solutions are the way to go: The alternative technology bridges the gap between the unreachable home and the fiber-to-the-home (FTTH) network. One good option is fixed wireless access (FWA), which uses 4G or 5G wireless spectrum to provide a pseudo-fixed connection to a home or building. For MDUs, a more straightforward, more cost-effective solution also offers excellent performance: G.fast.

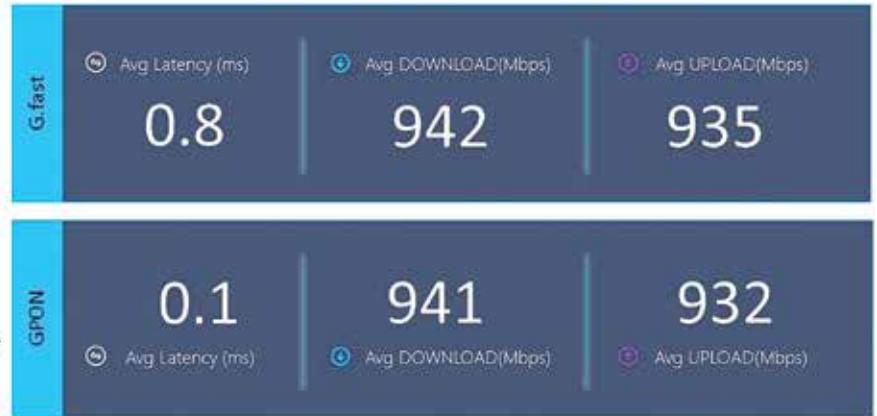
Even the oldest MDUs generally have good in-building wiring, whether coaxial or copper twisted pair, serving each home. G.fast is a technology that runs over this type of cabling to deliver broadband speeds and latencies indistinguishable from pure FTTH services.

That's no hyperbole. G.fast with the latest 212 MHz profile enables up to 2 Gbps aggregate speeds on the short loop lengths that one might find in a low-rise MDU and still delivers accurate, gigabit services on typical loops in larger MDUs. G.fast multiplexes upstream and downstream data using time-division duplexing, allowing operators to split the total capacity flexibly between up/down services or set it to adjust automatically depending on demand.

The latency on G.fast is less than a millisecond, which is perfect for movie streaming, video calls and cloud gaming. Because in-building wiring is not exposed to the elements, service stability is rock solid. These



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days, G.fast is absolutely on a par with gigabit fiber services.

Here's what G.fast might look like in a deployment: Fiber is drawn to a G.fast node, known as a distribution point unit, that sits on an outside wall, in the basement, or, if feasible, on each floor of an MDU. It connects to the in-building wiring that serves each apartment.

SOFTWARE IS KEY

One potential challenge with G.fast is that it introduces many more active network elements that must be deployed and managed. This is taken care of with software-defined access networking (SDAN), which can be applied to automate many deployments, provisioning and updating tasks, making a G.fast node deployment a plug-and-play activity.

The G.fast node is pre-provisioned in the cloud-deployed SDAN access network controller. Install it and plug in the network cable; the node is automatically identified, provisioned and ready to go as soon as it is powered up. Installation is fast and efficient and doesn't need a highly skilled technician on-site.

One challenge to consider is the complexity of managing multiple technologies – such as G.fast and GPON – on the same network. It's essential to think of that when

evaluating market options. Some can hide the complexity of G.fast, allowing it to be managed in the same way as fiber lines, keeping things simple for operators.

Another challenge can be how to power G.fast nodes, either because they need to sit outside a building or because of the time and cost required to draw a power line to an indoor location. G.fast takes advantage of the coaxial or twisted-pair cabling and uses reverse power feeding, in which power comes down the line from the G.fast customer premises equipment. This way, a dedicated power line for the G.fast node can be avoided.

These ingenious solutions provide a significant advantage for operators choosing G.fast. They can move quickly to deliver gigabit broadband services to MDUs, plugging any service gaps that could fall prey to customer attrition, regulator scrutiny or competitor incursions.

ACCELERATING TIME TO MARKET

Being fast to market also means being fast to revenue because a gigabit service boosts average revenue per user. Recent modeling shows that the net present value of completing an FTTH rollout with G.fast for MDU connectivity can be up to 40 percent higher than if the

MDUs are not connected and about 20 percent higher than when waiting for every MDU to be fiberized – assuming that they can. That's thanks to the almost immediate cash flow gigabit G.fast services generates – cash that can be reinvested into further fiber rollouts.

Fiberizing some MDUs may not ever be possible. Many others will take a long time to get there. In the meantime, operators have a vital duty toward their customers and want to ensure everyone – including MDU residents – gets the broadband services they deserve. G.fast makes this a real possibility and also makes for a compelling business case. ❖



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