MoCA and Translite Global Offer MDU Owners No-New-Wires Path to Gigabit Services

A case study demonstrates how MoCA member Translite Global solves gigabit networking MDU challenges for broadband service providers using existing coaxial cabling.

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Broadband networking for multiple dwelling units (MDUs) is still a greenfield opportunity for service providers and landlords who want to offer tenants premium, PON-based, fiber broadband services. According to the Forbes "Multi-Family Real Estate Forecast: 2014–2020," more than 35 percent of all U.S. homes are in MDUs.

The challenge for MDUs and service operators is keeping PON fiber installation costs under control, eliminating fiber ducting issues, and minimizing tenant unit disruptions.

The good news: A vast majority of MDUs built between 1960 and 1990 are wired with reusable coaxial cabling. Coaxial cabling can be the ideal, shielded conduit for PON fiber gigabit and multigigabit networking to each unit.

Translite Global, a member of the Multimedia Over Coax Alliance (MoCA), is an example of using an industry standard to repurpose existing RG6 and RG59 coaxial cabling for PON fiber multigigabit networking in MDUs.

Using the MoCA Access 2.5 technology standard, Translite Global developed a fiber broadband network solution for a telco and fiber ISP customer in the southern U.S.

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TRANSITION TO GIGABIT

The ISP customer was ready to transition from analog and end-of-life QAM infrastructure to gigabit speeds using fiber broadband internet, IPTV and VoIP services.

Encompassing 38 buildings with more than 1,500 units, the MDU consists of townhouses and four-, three-, two- and one-bedroom apartment homes, all wired with gigabit broadband–capable RG6 coaxial cabling.

The MDU attracts a tech-savvy clientele that includes students from Rice University and the University of Houston as well as professionals and families. When stay-at-home orders changed these residents from commuters to remote workers, learners and streamers, they not only wanted but also needed a gigabit broadband solution.

Delivery of fiber broadband from the street to the 1,500-plus customers at the MDU entailed a review of every installation aspect and challenge prior to the three-month installation process in

late 2020/early 2021. The coax was in excellent condition, confirmed through testing the coaxial cabling already installed in each building.

FOCUS ON SELF-INSTALLATION

To maintain COVID-19 safety protocols, all 1,500-plus units had to feature self-install customer premises equipment (CPE). Through a network-management loop-back feature built into the CPEs, common self-install issues of incorrect connections and bandwidth outages were eliminated. The CPEs were pre-provisioned using the same customized network management software, Pickle NMS, for plug and play.

The ISP's tests of Translite Global's TL-MCA-72-M MoCA Access 2.5 network controller, and TL-MCA-64-M MoCA Access 2.5 4-port CPE, met requirements with a bit of customization:

- MAC address filtering
- DHCP wireless filter setup for individual client CPE diagnostics
- Loop-back detection
- Bandwidth control (customized upload/download speed per end user)
- 4-port CPEs with VLAN tagging enabled
- Customized operating frequency range 400–1675 MHz, enabling use of existing CATV splitters
- Network controller debug port for technician applications
- Network-management software (Pickle NMS) for remote management of all CPEs from one platform
- Maintaining COVID-19 safety protocols through self-install CPEs.

OVERCOMING WEATHER ISSUES

Weather considerations also played a role. Translite Global modified new commercial exterior cabinets with custom temperature detection devices that eliminated most fluctuating weather patterns at the MDU location. These cabinets are mounted on the side of each building (exposed to the heat). Each cabinet includes a thermostat-controlled 12W fan.

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The high-airflow, low-noise fan allows pushing or pulling air through the enclosure. The fan turns on when the internal temperature rises to 85° F ±5° and shuts off at 67° F ±10°. This thermostat lets the custom temperature detectors maintain the interior temperature specifications of the hardware placed inside it. Housed in each cabinet is the PON to optical network terminals (ONTs) to the coax-based TL-MCA-72-M MoCA Access 2.5 network controller and ONTs.

Fiber going to the building terminates at an ONT. The ONT converts fiber to Ethernet to feed the device with MoCA Access 2.5. The MoCA Access 2.5 device then distributes the signal over coax to each apartment unit in the building. The splitting ratio is 1:32 max. For every TL-MCA-72-M network controller, there can be a maximum of 32 TL-MCA-64-M CPEs connected.

In addition, the broadband network infrastructure is future-proof. The TL-MCA-72-M MoCA Access 2.5 network controller's built-in second Ethernet port allows for a second uplink to use for backup or link aggregation, resulting in twice as much bandwidth capability to end users. The Translite Global NMS allows the ISP to enable/disable CPEs for customers remotely.

Best of all, MDU tenants can work, learn and stream with up to 1 Gbps symmetrical broadband using the ISP's fiber-first network.

Early on, Translite Global recognized the end-to-end fiber broadband network advantages of MoCA Access 2.5 are mutually beneficial for its service provider customers and MDUs, including

- multigigabit networks
- security built into each CPE through a loop-back feature that eliminates incorrect connections and bandwidth outages
- cost-effective installation with minimal MDU building and tenant unit disruption through self-installation and repurposed coaxial cabling.

The ISP wanted a solution that offered fiber PON gigabit-plus benefits to the MDU with minimal physical disruption, providing tenants with self-install CPEs that enable gigabit networking. Translite Global had been using the MoCA Access 2.5 standard as well as MoCA Home standards and knew MoCA Access 2.5 was a good match for the ISP and the MDU.

Coax is inherently a big, shielded pipe (medium) perfect for multigigabit networking minus the issues inherent with Wi-Fi, such as cost, wireless networking interference from multiple routers/gateways in close proximity, and customer install challenges (ensuring the right location for the router, dealing with Wi-Fi proximity issues, building structural issues, etc.) – issues that exist even with Wi-Fi 6 out now and Wi-Fi 6E out soon.

If there is existing coax in good run condition (e.g., no nail holes, no splitters causing issues, etc.), an MDU and ISP can use existing coax cabling and products featuring the MoCA Access 2.5 technology standard. It's a win-win for the ISP and the MDU. ❖

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