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Urban MTE and MDU Connectivity Equity

By: Jim Crammond

Gigabit and multi-gigabit broadband networking for affordable housing complexes in metro areas does not have to be expensive or require a complete network teardown or rebuild. Gigabit broadband network requirements at multiple tenant environments (MTEs), affordable housing complexes, and MDUs (multi-dwelling units) can apply industry standards to build equitable, affordable, and reliable broadband networks using existing wires for network connectivity and access.

Fiber broadband networking from industry to equity

The ongoing impact of Covid-19 has changed discussions in broadband networking connectivity circles from industry evolution to broadband connectivity equity. This is especially true when determining the most equitable network buildout profile for metro-area multiple tenant environments (MTEs), affordable housing complexes, and MDUs (multi-dwelling units).

In the United States, while all eyes may be on rural broadband, metro area MTEs and MDUs should not be left behind. Connectivity equity for metro area MTE and MDU owners, builders, and on-site managers as well as broadband network installers and providers has four networking necessities prior to any build:

- Installation at gigabit and future multigigabit network speeds without rip and replace in-unit requirements

- Low per-unit install costs that do not exceed existing networking subsidy programs (including the United States' Affordable Connectivity Plan, or ACP, that provides a one-time subsidy of $100 for a device, and up to $30 per month to pay for Internet services)

- Limited to no congestion with existing wireless networks, and
- Self-install at the unit tenant or subscriber level for cost reductions at install and ongoing network maintenance.

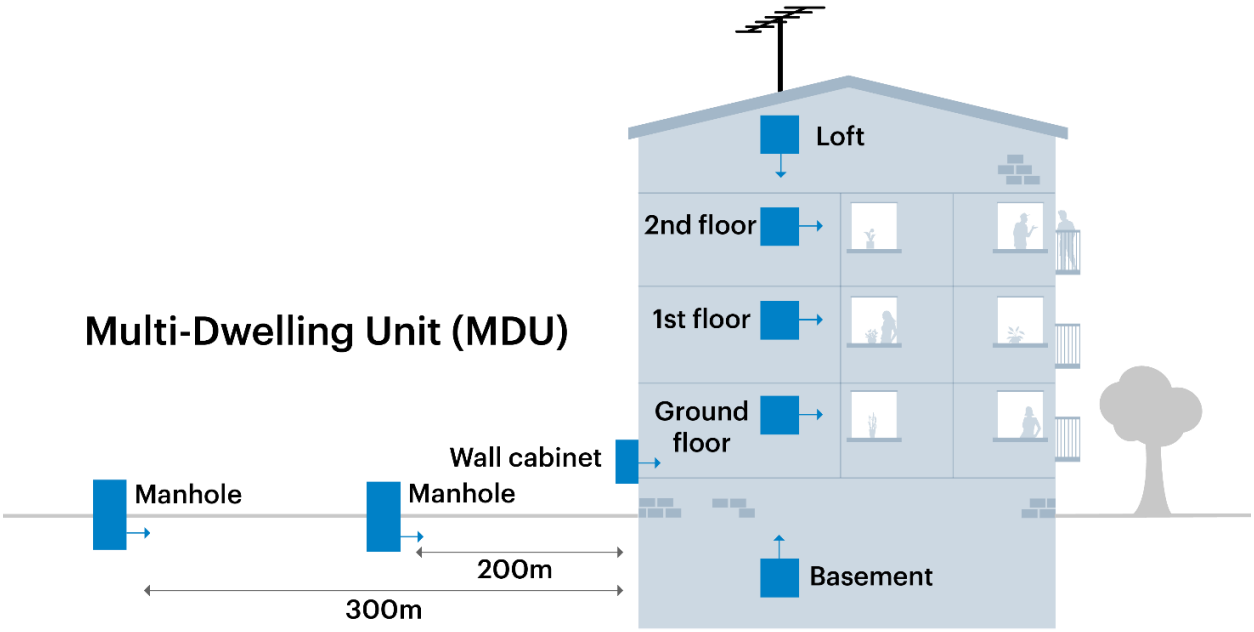

Figure 1: Typical Fiber to the extension point (FTTep) BBF TR-419 deployment scenario (courtesy of InCoax Networks AB)

Full fiber network installs come at a price

Fiber optic cable installation is approximately $1 to $6 per foot based on the fiber count. Average costs for 100 to 200 MTE or MDU units is in the $15,000 to $30,000 range. In addition to install costs, outlays for the MDU and MTE manager or owner include time spent seeking waivers and metro area permits along with entry permissions from the MTE and MDU tenants.

What if the requirements and challenges of fiber buildouts are reduced to ensure equitable, reliable, low latency gigabit networking now and multigigabit connectivity later in metro area MDUs and affordable housing complexes?

Fiber networks and standards organizations

Network connectivity standard-setting organizations, in addition to the FCC's 2022 clarified ruling for in-building wiring ownership, provide owners, managers and tenants best-of-breed broadband fiber networking connectivity featuring lower costs, fewer buildout challenges and ultimately metro-area network equity.

Through the implementation of industry standards such as MoCA Access™ from MoCA®, Multimedia over Coax Alliance, plus TR-419 from Broadband Forum, BBF, the challenges and requirements of MTEs and MDUs can be resolved by bringing fiber to the extension point (TR-419 FTTep) and reuse of existing connectivity infrastructure, which includes coaxial TV cabling.

For gigabit and future-proofed multi-gigabit fiber connectivity to each unit in an MDU or MTE, MoCA Access™ and FTTep provide operators, MDU, MTE, and affordable housing builders, managers, owners, and tenants with an architecture to deploy fiber services at a cost that is 30 percent less than full fiber installations.

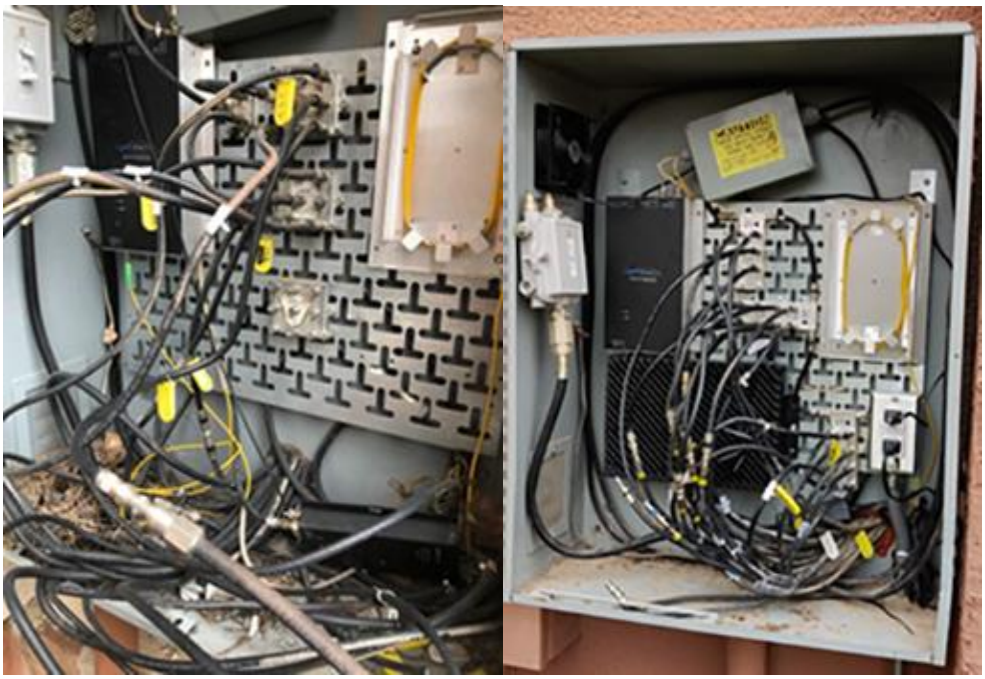

Figure 2: Before and after rebuild of the 13 MDU boxes, many coax cables cut with boxes unusable. Each box was cleaned, powered, and fully tested. Fans were installed in each box to accommodate hot Texas summers. 2.5 Gbps to each building on Stoneridge Apartments' property, 40Gbps routing capacity. 1 Gbps fiber network to each of the 256 apartment homes now with additional capacity. 100 Mbps downstream or 10+ devices streaming at one time. (courtesy of PCs for People)

Stoneridge Apartments: equity in broadband networking

Stoneridge Apartments, a Dominium-owned and managed affordable housing complex in a northeast suburb of Austin, Texas, is a case study of how metro area MTEs and MDUs can implement this union of fiber with existing coaxial network infrastructure for equitable broadband connectivity and affordable fiber networking.

Based on products from InCoax Networks, a member of MoCA®, the high-speed connectivity networking standard MoCA Access™ 2.5 and fiber termination standard FTTep, PCs for People®, a nonprofit network service provider offering equitable broadband networking installations and management, was able to design and install secure fiber broadband gigabit networking and connectivity performance to all 256 Stoneridge apartment homes over 13 complexes as well as at the learning center and pool house.

Reuse of existing coax connectivity networks in each building and self-install of InCoax's MoCA Access™ 2.5 coax to Ethernet bridges connected to a wireless router meant no apartment

required additional visits from installers. Self-install also decreased installation costs and limited contact with tenants during COVID-19.

Stoneridge Apartments install specs

The installation process connected the newly laid underground fiber trunk fiber to a fiber switch at each of the 13 apartment buildings in addition to the pool house and learning center. InCoax MoCA Access™ 2.5 Control Units were mounted in the buildings' 13 outdoor wall cabinets, where the coax cable network originated and connected the fiber to the coax network that extends to each apartment's coaxial cable outlet. In-home access modems were then connected to the existing coax outlets, which were self-installed by the tenants. The coax outlet is situated near the media hub at the heart of the apartment, making additional apartment wiring unnecessary.

Reusing the coaxial network with a point-to-point (home run) connection from basement or outdoor cabinet to each living unit provided multi-gigabit capacity. Fiber access extension technology from TR-419 and MoCA Access™, acting as a fiber extension coaxial cabling bridge from wired to wireless with integrated provisioning and management, allowed install costs to be lowered from the previously calculated $440 per apartment to $125 per apartment. By partnering with PCs for People, Stoneridge Apartments now has symmetrical high-speed broadband Internet of 1 gigabit per second, thanks to PCs for People's application of InCoax Networks' products based on the MoCA Access™ 2.5 standard and BBF's TR-419 standard.

Summary

There are a variety of ways coaxial cable can be installed in affordable housing, MTE, and MDU scenarios, from the home-run wiring scheme defined in this article to configurations in which several apartments share the same coax drop on the same floor of a building. Standards from MoCA® and BBF® work in a variety of coaxial configurations; providing gigabit speeds and installation cost reduction benefits that resolve the connectivity challenges of metro area MDUs, MTEs, and affordable housing complexes.

This article features input from:
Helge Tiainen, Vice President of Marketing, InCoax Networks
Tom Esselman, PCs for People, Executive Director - Kansas City, MO
Mike Voss, DOMINIUM, Director of Communications, Development