Flexibility With Fiber in Multifamily

Fiber creates infrastructure and service options for community broadband installations.

The Multifamily Broadband Council (MBC) and the Fiber Broadband Association (FBA) technology committees recently discussed the benefits of using fiber in multifamily communities. Here's an excerpt of the conversation.

MBC: *In the FBA's view, why are multiple-dwelling-unit (MDU) installation options using fiber more flexible and less intrusive than using coax infrastructure is?*

FBA: Fiber technology has improved to the point that it is now easier and less visible to install fiber than coax. One fiber meets all of today's and tomorrow's needs. Today's fiber is much more robust and cost-effective to install in new or existing buildings, compared with past fiber technology.

There are fibers on the market less than 1 mm in diameter that can be discreetly installed along ceilings and crown molding; coax cable is 6 mm in diameter. There are 3 mm fiber cables on the market that can be tied into knots without damage and with negligible signal loss.

Fiber is also easier to install and maintain. Plugging in a fiber connector is a very easy process, eliminating the need for in-unit splicing. Fiber is a long-term solution that can grow with anticipated bandwidth demand.

MBC: *Discuss some of the passive infrastructure benefits with fiber in multifamily buildings when compared with hybrid fiber coax (HFC).*

FBA: Fiber networks are typically passive systems, and, unlike HFC networks, there is no need for mid-span powering, so the components take far less space in the building. In most fiber builds, the system is fed by an optical line terminal (OLT) within 20 km (12 miles) of the MDU building. A compact passive fiber distribution hub or splitter may be located within the MDU building or externally. The passive fiber network within the building then connects to an optical network terminal (ONT) in each apartment unit.

The ONT is the only powered device in the network, typically from an existing wall plug next to the ONT, and it replaces the traditional cable modem. The ONT may have ports to feed legacy in-home copper networks or connect to a separate Wi-Fi router or may have integrated Wi-Fi capability for signal distribution throughout an apartment. Installing a passive network in a building can typically be performed by technicians with minimal training.

MBC: *What are some ways fiber can help with controlling broadband service tiers and providing consistent service?*

FBA: Fiber is a long-term broadband medium that is essentially future proof – it supports bandwidth requirements for today and tomorrow. The service tiers can be easily altered by software changes or, in the case of moving to a new technology generation, by upgrading the equipment on either end of the network. The installed fiber remains unchanged.

MBC: *What are the data capabilities of fiber vs. coax?*

FBA: Fiber has at least 100,000 times the capacity of any other medium and is limited only by the electronics connected to it. With bandwidth demands increasing 10 times every 10 years, fiber is the only technology that can keep pace for the life of a building.

Coax can typically provide decent bandwidth over very short distances, but the signal must ultimately be regenerated or amplified, requiring powered electronics. With fiber, because of its very low signal loss compared with that of metallic cables, distance is removed as a design factor. Fiber networks transport signals over long distances with very little distortion, enabling higher bandwidth for longer distances.

Fiber systems support symmetrical gigabit (1,000 Mbps) service. Some coax systems support gigabit to the subscriber, but they are typically limited to about 30 times lower upstream data rates. This limits the ability to upload videos, for example. Some MDUs use 10 gigabit systems. They are just the beginning for fiber, with 40, 50, 80 and even 200 gigabit systems under development.

MBC: *With respect to costs, does a fiber buildout cost more, and are there some rough budgetary guidelines comparing options such as Ethernet, coax (DOCSIS) or twisted pair (DSL and G.fast)?*

FBA: Fiber now costs the same as both copper and coax-based systems such as DOCSIS, xDSL or G.fast. However, buildings typically don't have just coax or copper – it's almost always both. That significantly drives up the cost of legacy cables, for both the raw materials and the labor.

That puts fiber on par or cheaper for capital expenditure costs. Passive fiber infrastructure is also a clear winner when considering operating costs.

According to RVA consumer research for the FBA, high-speed, reliable internet is the single most valued amenity for MDU residents (who, on average, use the internet more frequently than single-family residents do). This research shows that fiber broadband increases consumer satisfaction with the community itself, decreases churn and increases the perceived financial value of each unit. The property owner, with properly marketed fiber broadband, can enjoy lower marketing costs, higher occupancy and higher rental rates, increasing financial return and ultimately the value of any fiber project. FTTH is available to more than 40 million households in the United States, and about 5 million more are getting access to fiber each year. Those without fiber will be left behind as new applications outstrip the capacity of lesser technologies.

In short, the time for fiber is now! ❖

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