Wireline Broadband Network Trends for 2020

Although 5G will capture headlines, the fiber-based wireline network will serve a dominant role for supporting wireless traffic as well as providing high-bandwidth services to residential and business customers.

By Ric Johnsen / *CommScope*

With all the hype around 5G wireless, we tend to forget that wireline networks deliver broadband services to tens of millions of customers around the world. Residential customers, business customers and 5G base stations and small cells all rely primarily on fiber-based connectivity. In 2020, service providers will explore new ways to drive their networks closer to the edge.

Three key trends support this change: coverage, efficacy and capacity.

COVERAGE: CLOSE THE DIGITAL DIVIDE AND ADDRESS MORE APPLICATIONS

In the United States, two strategies address the need for bandwidth growth and increasing applications. MSOs are building on their HFC networks with extended spectrum DOCSIS and Remote PHY. Telcos are looking for ways to leverage existing fiber networks or to build new fiber plant to address the demand for access and bandwidth.

In Europe, there's an ongoing push toward fiber-rich and all-fiber networks, typically passive optical networks (PON), for residential and business services and to prepare for 5G backhaul. Service providers want to level the playing field, eliminate the digital divide and provide access to all their customers, and they need to use new technologies such as XGS-PON and wavelength-division-multiplexing passive optical networks (WDM-PON) to get more out of existing networks.

Government mandates and programs are one factor driving expanded broadband services. Across Europe, many governments – at the continental, national, state and municipal levels – have established programs aimed at closing the digital divide and bringing broadband to all citizens. As fiber-to-the-home (FTTH) programs already cover most urban areas in several countries, the focus is shifting toward less-populated rural areas.

These efforts are undertaken by incumbent service providers and their direct challengers, but "alternative network operators" are on the rise, often with a "wholesale only" approach. Increasingly supported by private investors who value the simplicity and visibility of this model, these new players contribute to the dynamic of the FTTH market in many European countries.

EFFICACY: CONVERGE NETWORKS TO DRIVE BETTER USE OF ASSETS

The next generation of wireless mobile network requires a density of fronthaul/backhaul connections akin to a fiber-to-the-neighborhood network. Fixed wireless networks are even denser. This trend is caused by the density of the users and the wireless technology being used. Generally, 4G and 5G drive an increase

in the number of cell sites and fixed wireless technology will drive even denser deployments. All of this drives the need for more fiber in more locations. As a result, there will be a need and opportunity for efficiency by managing the physical plant as a single unit, regardless of whether it serves wireline or wireless services. The need for power and mounting locations also adds to the need and opportunity for a single network. We have seen operators start to change management models to accommodate this type of network; they have started to shift the designs and the requirements of the products that service both central offices and headends and the outside plant.

Operators and neutral hosts are moving toward operating one network for broadband and 5G wireless. In practice, this means bringing more broadband to the edges of the network, where it can serve individual subscribers as well as 5G base stations and small cells. Service providers are beginning to treat the entire network as one cohesive entity.

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CAPACITY: EMPLOY NEW TECHNOLOGIES

Service providers recognize that they must bring more bandwidth to more endpoints in their networks to support expanded broadband access and 5G services, but they don't always want to dig new trenches or string new overhead fiber. In 2020, providers will increase their use of bandwidth-stretching technologies such as WDM-PON, higher-speed PON technologies such as XGS-PON and NGPON2, or high-speed transmission technologies such as 10-gigabit Ethernet backhaul with edge distribution switches.

In 2020, a drive toward broadening access to broadband and wireless services will entail the use of edge-networking techniques such as next-generation PON, Ethernet, and new technologies to get more bandwidth out of existing network infrastructure. Service providers will build their edge-networking capabilities and continue the trend toward converging wireless and wireline networks to improve efficiency. ❖

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