

How Telecom Infrastructure Players Will Help Bridge the Digital Divide

Connecting more parts of the world with affordable broadband will require collaboration between governments, businesses, service providers, telecom infrastructure companies and other players.

By Stephen Szymanski / *STL*

Simplicity is about subtracting the obvious and adding the meaningful. Few people foresaw the huge impact COVID-19 would have on health or the global economy, let alone networks. The pandemic also had a magnifying effect on inequality, especially the digital divide. It's clear that in 2021 and beyond, the importance of internet is paramount for work, education and staying connected.

According to the Boston Consulting Group, broadband connectivity helped save jobs and enabled online retailers and grocery chains to grow their online presence.

“Twenty years ago, the world’s connectivity levels would have been able to help, at most, 0.2 percent of the labor force to work remotely compared to the 10 percent of people in the global workforce who have been able to work from home in 2020. Today’s connectivity levels saved from 150 million to 300 million jobs, safeguarding \$8 trillion in global GDP,” the research firm said in a report. “In the U.S., current connectivity levels have enabled online retailing to grow by 15 percent to 30 percent, food deliveries to rise by 90 percent, and online grocery shopping to skyrocket by 140 percent during the crisis – none of which would have been possible in 2000. Those sectors alone have contributed \$4 trillion to global GDP so far, in addition to providing an indirect boost to adjacent businesses.”

CONNECTING THE UNCONNECTED

The U.S. needs to catch up with the rest of the world when it comes to connecting its citizens, especially rural Americans. According to a recent report from United Nations Educational, Scientific and Culture Organizations (UNESCO), the U.S. ranks 24th in terms of household

broadband penetration, and 20th in the world for fixed broadband subscriptions per capita.

The U.S. Innovation and Competition Act of 2021, recently approved in the Senate, is a \$250 billion bill that aims to boost U.S. chipmaking and ensure technological competitiveness. More than 42 million Americans do not have internet access, and for millions more, it is available but unaffordable.

The U.S. faces the complex choices to rebuild infrastructures that the pandemic exposed. Digital subscriber line (DSL) technology is quickly becoming obsolete because even with various flavors of DSL, VDSL2+, etc., the technology has limitations. In many cases, fiber will provide the necessary backbone to support hyperscale growth and future-proof networks.

What’s clear is that data consumption is growing relentlessly, whether it is at home, in the office or on the move. Disruptive events, such as the pandemic, result in significant traffic bursts overnight with a changing mix of type of data flows. With economic activity depending more than ever on digital infrastructure, investments in this “fourth utility” will accelerate. The high costs of building infrastructure that supports both mobile and fixed-network functionality will drive operators to optimize investments to make the case work.

BUILDING SMARTER DIGITAL NETWORKS

Networks need to become smarter, more competent and more available for all. With data consumption reaching unseen levels, it’s important to build new networks or modernize existing ones.

New networks must be nimble, software-driven and have centralized controls. These vendor-agnostic networks

will have virtual network functions, edge computing and memory powering all applications.

A main concern is what it will take to make these new-age networks available to everyone in a faster, more affordable way. A key factor is dense and quick fiberization.

FIBERIZATION KEY TO SMARTER NETWORKS

Today's optical fibers are works of engineering mastery. They are ever-evolving to meet market needs. Seemingly simple innovations, such as bend insensitivity, can have a huge impact on the lifetime of a network, adding 10 to 12 years.

5G and FTTx will require similar amounts of fiber in the distribution network for a full rollout. Delivering scale and fast home-pass readiness is not easy. Challenges include the requirement for skilled workers to reach high-rises and stand-alone

residential buildings with reliable speed and simple deployment.

Fiber deployments require safe excess cable storage, minimal bend loss and seamless coupling and connection via optical passive equipment. In addition, 5G with higher frequencies penetrates poorly into buildings, and real implementations could require additional small cells close to human hot spots, mounted on facades and integrated into public infrastructure such as lamps, posts or street furniture. Infrastructure investment in wired or wireless requires careful network design and consideration. It also requires deep customer understanding and data-driven insights at the core of network design.

The goal is to deliver on scale, latency and agility requirements that factor in the reality of customer demand and provider infrastructure – whether greenfield or brownfield – and prevent over- or underbuilding of

assets. Building a sophisticated optimal network that meets the most granular of requirements is a huge, daunting task service providers face.

A CALL FOR UBIQUITOUS DATA CONNECTIVITY

Data connectivity is both enabler and catalyst. Governments, businesses, service providers, telecom infrastructure companies and other players will need to work together to connect the next billion users in a scalable, cost-effective way while weighing new technology advancements to build a future-proof network available to and affordable for all. ♦

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