Demand and Delivery: Bridging the Digital Divide

By: Frank DeJoy

Demand has never been greater, consumer needs more urgent, and government funding more accessible. So why are broadband providers facing such difficulty delivering Internet to the country's vast underserved communities? And how are these new obstacles transforming how network teams work?

Broadband's transition from entertainment luxury to societal and economic necessity has been fast and extensive. Access to a high-speed broadband network is no longer merely a convenience or amenity. Like the telephone in the twentieth century, broadband Internet service is entering the realm of an essential service in the twenty-first.

Only about one-third of American homes can access all-fiber-optic networks. A lack of connectivity among rural Americans is much publicized, but the problem is just as stark across some urban regions of the country. In addition to costs to build broadband networks in rural areas, the digital divide is also a result of the costs of connectivity between higher- and lower-income areas. It is important to note that three times as many low-income Americans are without broadband access than rural Americans. The problem is broad in scale and centered on social inequality.

Quarantine protocols have only exacerbated this already-urgent need. Access was previously becoming increasingly necessary for work, school, and healthcare. Now, broadband serves as an outlet for ordering groceries, applying for jobs, accessing government services, and connecting with family members. As one of the essential infrastructure assets of the current generation, broadband access also represents a foundational transition to the burgeoning digital economy—

a lifeblood of national economic development, international competitiveness, and industry innovation.

Solving the cost puzzle

Demand is sky-high and time-sensitive. So, why are networks struggling to deliver? When it comes to last-mile options, there are many viable solutions available. From established solutions like DSL, DOCSIS, and fixed wireless to premium and emerging options such as fiber, 5G, WiFi 6 and satellite, there is no shortage of technology to match any unserved or underserved population. What's the challenge, if not delivery?

All of the above options rely on fiber as the backbone, and fiber delivery comes with complexity. Cost-to-serve is a primary challenge in expanding broadband access. Unfortunately, from the perspective of service providers, there often isn't enough population to justify an investment in rural areas, and the decision merely becomes economic.

In an attempt to provide equitable Internet access to all communities, there has been an injection of federal-level, high-cost support incentives such as the Federal Communications Commission (FCC)'s Rural Digital Opportunity Fund (RDOF), Connect America Fund (CAF), and the USDA's ReConnect Program, to name a few. Most recently, RDOF is set to distribute $20.4 billion in network infrastructure stimulus. And this is just national-level funding. There are also a myriad of state-level funds, private awards, and local grants. With considerable stimulus already in play, this may just be the beginning as the FCC seeks to leverage private-sector investment to build the country's networks. President Joe Biden has already earmarked an additional [$20 billion](#) for expanding broadband infrastructure. The plan includes tripling the funding toward Community Connect broadband grants and restructuring the Lifeline program for Internet and phone subsidies.

Tools for the job

Peak demand and unprecedented funds drive the charge to build high-quality networks quickly, but network operators must adapt to stringent new compliance standards—and many are not ready. The funding source determines the parameters within which the networks must be delivered, and traditional construction approaches will be challenged to keep pace with the stringent new guidelines. Such compliance requirements have become an unlikely new obstacle to solving the digital divide. To maximize successful buildouts, network providers must turn to adopting the most efficient approaches and technology to aid them.

FCC funding programs have performance benchmarks for bandwidth and latency, location prioritization based on census blocks, and project build milestones to meet. Some of the standards are aggressive. For instance, the soon-to-commence RDOF program requires a 40 percent completion rate by the end of a project's third year, regardless of weather, permitting delays, labor shortages, mapping issues, or material availability. Non-compliance results in an escalating series of penalties.

For many companies, meeting these delivery obligations and quality objectives will require new control tools to maximize field productivity. These new regulatory structures will push network providers into a new era of productivity. Network operators will be forced to adopt incremental efficiencies and innovations to solve the compliance and reporting challenges ahead, leading to the dawn of a new level of efficiency in broadband network buildouts.

Mapping out the future

A tool to enable such broadband network build efficiencies will use geographic information to acquire data for analysis and modeling. Replacing paper construction prints and manual handoffs, end-to-end digital deployment models can provide automated workflows to distribute work to team members throughout the field. A maps-based interface on each worker's mobile device visually guides them to their next task and specifies which materials are required. Technology like this can add incredible value, not just by communicating tasks but also by automating the distribution of tasks to crew members in a sequenced way to optimize delivery times and build paths. Tasks are assigned on a data-driven basis to maximize productivity. For instance, crews will not waste truck rolls on a site before the site is ready or be sent to a task for which they are not qualified. When performance is essential, crews need to ensure only the most efficient process is followed at all times, especially when building at scale.

There are strict compliance and reporting requirements attached to these subsidized network projects. Digital network construction tools can add visibility and transparency to projects by providing the vast volumes of build data in a centralized view for real-time integration by project stakeholders. The ability to track progress in real time ensures FCC reporting requirements are simplified, and there is early identification of at-risk delivery milestones and faster, more informed build decisions. Attempting to meet these reporting requirements by transcribing data from paper construction prints and working with Microsoft Project or multiple Excel sheets introduces significant risk of error and inefficiency, which can be immediately addressed with a fully digital approach.

Sales, news, education, jobs, and communication have moved predominantly online. Broadband Internet service is now an economic cornerstone. Access to high-speed Internet is a significant advantage all Americans need, and bridging the digital divide will require a united industry committed to delivering fiber infrastructure more efficiently. Because the levers that drive project decision-making are new, the construction process's characteristics are new, and project teams must look to new delivery systems and technology to handle them. If organizations adopt the cutting-edge new tools available to them, we can end access inequality and usher in a new era for buildout efficiency.