

# Fiber Broadband Industry Faces Material and Labor Shortages

A shortage of fiber, chips, other materials and skilled labor could impact the expansion and rollout of new broadband networks.

By Bruce Forey / *BroadMax Group*

The fiber broadband industry is buzzing with talk about material and labor shortages just as the U.S. market is set for another spike in buildouts. With billions in federal broadband subsidies starting to become available, ISPs are gearing up to expand existing networks or build new ones in underserved communities.

It's impossible, however, to build networks without material and hardware, a concern in the U.S. and Europe. COVID-19 certainly compounded the situation. The pandemic shut down electronics manufacturing plants in Asia for months, stopping the flow of goods. But some industry analysts say a strain on fiber broadband-related materials and components was already underway.

Ronan Kelly, CTO for ADTRAN and a past president of the FTTH Council Europe, says an ongoing fiber broadband boom in the U.K., now spreading throughout Europe, placed a premium on network materials before the pandemic. Four years ago, about 10 operators built out fiber networks. He says today 50 operators are building out fiber, and the incumbent operator, Openreach, is targeting 20 million homes passed in the next five years.

"We're seeing hundreds of billions of dollars being pumped into the European market," Kelly says. "We're starting to see the same thing occur on the U.S. side, and investors want to build networks as quickly as possible. There's a massive explosion happening in that market for everything from raw materials to the electronics that go on either end of the fiber."

Teresa Mastrangelo, principal analyst with Broadbandtrends, agrees that chip supply issues could delay U.S. service provider network expansion efforts.

"The biggest issue we continue to see in the U.S. is with shortages of components, which obviously affects equipment," she says. "Operators building out or upgrading their

broadband networks may face challenges obtaining necessary equipment to provide that service."

## CHIP SUPPLY SHORTAGES

The pandemic further validated the need for fast broadband to support basic lifestyle needs in the 21st century. It also brought more attention to the global supply chain. One component affected is semiconductor chips.

To address the issue, President Biden signed an executive order to review the status of the U.S. supply chain. He also proposes a \$50 billion stimulus incentive for the U.S. semiconductor industry. However, Kelly says chips used in fiber broadband equipment are older-generation design. These chips are also used by the auto industry, in consumer electronics and in some industrial equipment, so there's competition for available supply. Kelly is concerned that if U.S. manufacturers ramp up production, they may primarily focus on manufacturing newer-generation chips.

"The challenge today is there's not a lot of investment to bring in additional capacity in the older part of the industry that serves our needs," Kelly says. "Investment dollars are primarily focused on developing and manufacturing the seven-, five- and three-nanometer technology chips for bigger returns."

Semiconductor chips are just one component in short supply. Electronic capacitors, resistors and even plastic polymers are increasingly scarce.

"You can have the most sophisticated circuit board in the world, but if you don't have that last filter cap on it, you can't make the product to sell," says Kelly.

To ensure materials and hardware are available for long-term fiber buildout needs, vendors and manufacturers keep in close communication with their supply-chain partners and customers. The material shortage is generating discussion about bringing more manufacturing back to the U.S.

“I think there’s a feeling that perhaps the U.S. unwisely offshored a lot of capabilities and gave up our dominant positioning in manufacturing,” says Tom Tunstall, senior research director for the Institute for Economic Development at the University of Texas at San Antonio.

“I haven’t really picked up on any discussion about a national sovereignty approach, but given the ongoing trade restrictions with China, certainly the undercurrents are there,” he says. “Business schools and organizations should rethink supply-chain strategy going forward – that reliable trading partners are of equal or greater importance to the cheapest trading partner.”

For now, a 60-week lead time for materials and supplies is not uncommon. Kelly says larger companies with deeper pockets can stockpile inventory to keep their clients moving forward. He says ADTRAN is in constant communication with its customers to understand their buildout projections for the year. He predicts ISPs just now putting network construction plans into action may face the biggest obstacles securing inventory.

As a result, Mastrangelo predicts some companies will have to scale back their 2021 buildout plans. “I don’t think anyone’s being denied equipment. It’s the length of time from when companies place their order to when they receive the items that may take longer than anticipated,” she says. “They adjust in the sense they can only do with what they have. So, if they only have enough equipment to support a few thousand subscribers a month, they put in what they can.”

### LABOR TRAINING IS KEY

Waiting a year for materials and hardware could be a better scenario compared with the time it could take to overcome skilled labor shortages in the fiber industry. In the U.K., government apprenticeships train workers in all facets of the fiber trade. These training programs often take up to 12 months. Some companies are now doing away with this holistic approach and offering specific training for positions that need to be filled quickly.

In the U.S., the Telecommunications Industry Registered Apprenticeship Program, a joint venture of telecommunications companies and industry associations, reported in 2020 that there were more than 3,600 registered apprentices in telecommunications occupations. Other industries have had success partnering with local colleges, universities or trade schools developing a skilled workforce to fill open positions.

“In San Antonio, the Alamo Colleges are really good at partnering with aerospace companies and Toyota to put together programs to get people trained for the types of occupations available at those companies,” Tunstall says. “It’s often hard to predict what the jobs of the future are going to be, but in the case of the fiber broadband and telecom industry, it looks really straightforward.”

Until more people choose to pursue careers in telecommunications, strong competition for experienced employees will likely continue. Though this is good for maximizing worker compensation, there can be some tradeoffs for employers.

On Trac Inc., which provides a variety of field and professional services and is a Google Fiber installer, is always looking for top talent. The company places a premium on its culture and core values and seeks employees who are the best fit.

“There are a lot of big players, they’re all chasing the same skilled labor, and it’s very unit-driven and not very relationship-driven, which is what we value,” says Monte Hill, president of On Trac. “We’ve recruited many of these telecom veterans: invested time and resources to onboard only to have them leave after a short period for a relatively small increase in pay.”

As a result, On Trac has turned its focus to recruiting and hiring people from outside the industry. A premium is placed on a potential hire’s stable employment history, an excellent attitude and a strong work ethic.

This means it’s roughly six months before a new employee is fully up to speed. It’s a worthwhile investment for On Trac to develop a team partner committed to performance goals and the company’s culture.

“One of my last two project manager hires was a director for a parks and recreation department and the other was a high-school teacher and baseball coach. They had no technology experience whatsoever but were looking for a new opportunity,” says Joseph Jones, executive vice president of On Trac. “They fit personality-wise into our culture. So, going outside the industry has worked very well for us. In our experience, we’ve had far less turnover with these employees compared with those who’ve been in the industry a long time.”

As the fiber industry plays catch-up with its skilled labor force and supply shortages, is an opportunity being created for 5G and other broadband technology companies to quickly fill a void? Industry experts feel this service could provide a solution for some victims of the digital divide. But the seemingly insatiable demand for broadband capacity from technology developers and consumers appears to give fiber technology an advantage over any fixed wireless alternative.

“I do think we’ve set a trend in which remote work and education are going to be a lot more prevalent than they’ve ever been in the past. The problem is that the people who really need fast broadband to connect remotely are those who still don’t have it,” Mastrangelo, says. “A fiber network takes time to build. I think every means available is being considered, whether it’s fiber, satellite broadband, fixed wireless access or 5G. There’s a push to look at all alternatives to get some type of broadband service to people who are currently unserved as quickly as possible.”

Kelly says as service providers make more bandwidth available, applications will emerge to take advantage of it. “Consumers will continue to use more bandwidth. To meet this ongoing demand, we’ll have to build out more bandwidth into the future,” he says. “In my view, fiber technology is better suited to meet those needs compared with 5G.” ❖

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