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JOURNAL REPORTS: TECHNOLOGY

Technology Companies Target the Cord Cutters

Facebook, tech startups try to connect more customers to the internet

By Sarah Krouse

Oct. 23, 2019 10:27 am ET

Facebook Inc. [FB 1.24%▲](#) is getting deeper into the wireless business.

The social-media giant isn't buying a cellular provider or even licenses to use federally controlled airwaves. Instead, it has built networking technology that equipment makers and internet providers can license free of charge that helps provide home internet connections through wireless service instead of running fiber to each home.

The move is part of a growing effort by some tech giants and a host of small, upstart internet providers to win more customers by creating home wireless connections at speeds comparable to what traditional fiber can deliver, at a cheaper price than the big cable companies charge. These new services often come with fewer restrictions on data usage than traditional providers.

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Combined, these internet providers control just a small slice of American households but aim to take more as consumers cut the cord and seek cheaper alternatives to traditional broadband providers. In some cases, the upstarts will compete with the faster 5G home broadband service that carriers like Verizon Communications Inc. [VZ 0.35%▲](#) are racing to roll out.

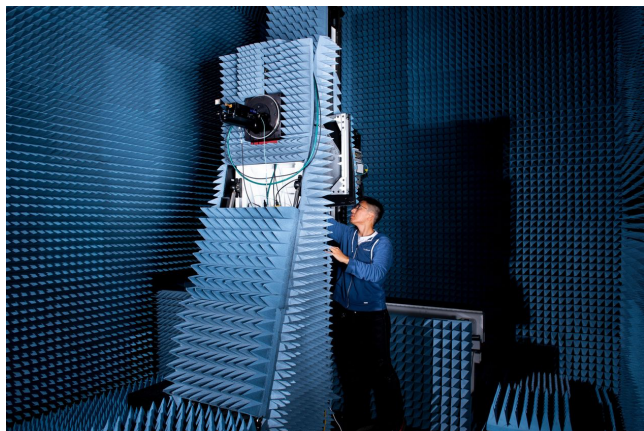
The new wave

For the most part, Facebook and the other tech companies looking to get into the wireless game are still in the early stages of their efforts.

Microsoft Corp. [MSFT 0.74%▲](#), for instance, has pressed the Federal Communications Commission to free up more unused television broadcast

airwaves for rural connectivity and created patents and equipment for using them. Alphabet Inc.'s Google, meanwhile, has tested laying its own fiber and is trying to commercialize its Loon project, which delivers connectivity via stratospheric balloons.

Meanwhile, Facebook's technology, called Terragraph, uses unlicensed airwaves to transmit signals, which are broadcast by small radio nodes that can sit on some consumers' homes or street poles. The providers that use Terragraph can rent existing fiber to help power their networks, but the fiber only has to be within about a mile radius.



Qi Tang, a hardware engineer at Facebook, inspects equipment to be tested at the Facebook Connectivity Lab in Fremont, Calif. PHOTO: WINNI WINTERMEYER FOR THE WALL STREET JOURNAL

Together, the fiber, airwaves and nodes create a mesh of wireless coverage that helps service providers avoid running physical fiber to every house they want to reach. When one signal in the mesh network that the nodes create gets blocked, the system automatically reroutes it to avoid service disruptions.

That mesh network is necessary, because Terragraph—like other technologies for providing wireless home internet service—relies on ultra-high-frequency airwaves that deliver fast speeds but don't travel long distances. In addition, these airwaves struggle to penetrate hard materials and can suffer interference during inclement weather, challenges that have long made them difficult to use and that engineers and equipment makers are still working to overcome.

Facebook says its plans for Terragraph are limited to empowering internet providers, which brings more people online and translates into new users for itself. "We're just trying to do that one thing, which is to get people online," says Dan Rabinovitsj, vice president of connectivity at Facebook. "We don't want to stand up and operate networks."

Like many of the small providers in this niche, the companies that are using Terragraph are largely still experimenting with the system or deploying it in a small area. Terragraph technology has been tested in parts of Malaysia,



Dan Rabinovitsj, vice president of connectivity at Facebook, at the company's headquarters in Menlo Park, Calif. PHOTO: WINNI WINTERMEYER FOR THE WALL STREET JOURNAL

Hungary and San Jose, Calif.

It is currently used by Common Networks, a three-year-old service provider, in some of its radios to provide in-home 5G service in markets including Alameda, Calif. The technology is also set to be deployed in service offered by Agile Networks in a Canton, Ohio, innovation district next year.

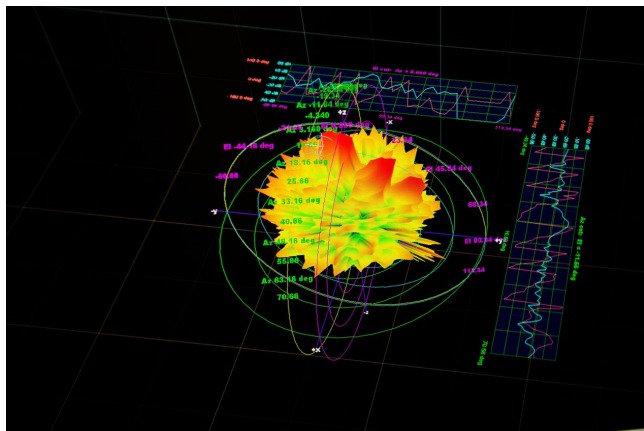
For providers that adopt Terragraph, cost is a big factor. Common Networks, which targets suburban areas with 500 to 5,000 homes per square mile, uses Terragraph and other radio technology that enables wireless broadband in suburban areas where it can be expensive to lay fiber to every home. It charges up to \$49 a month for high-speed service.



Jonathan Weinberg of Common Networks inspects an antenna installed on the roof of the Alameda Theatre and Cineplex, the tallest building in Alameda, Calif. PHOTO: WINNI WINTERMEYER FOR THE WALL STREET JOURNAL

Kyle Quillen, chief executive of Agile, says bringing internet service to a 25- to 30-home development outside Canton would likely cost \$250,000 and take nine months with traditional fiber. The company plans to do it in three months for 30% of the cost, partly because of the Terragraph technology, which is “a multiplier of availability and capacity,” he says.

Terragraph is part of a stable of connectivity projects at Facebook that include helping carriers analyze how their networks are performing or being used by customers, and Free Basics, which involves partnering with local carriers to provide limited internet access. Free Basics, which is available in dozens of countries, has met political opposition in some corners of the world.



Results of an antenna test at the Facebook Connectivity Lab displayed on a computer screen.
PHOTO: WINNI WINTERMEYER FOR THE WALL STREET JOURNAL

Other competitors

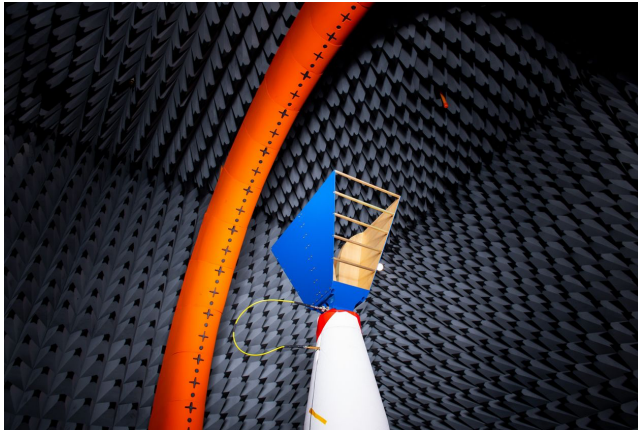
Meanwhile, other service providers are finding their own ways to sell home wireless service.

Starry Inc., a four-year-old company, uses licensed ultra-high-frequency spectrum and its own technology—from chips and base stations to home Wi-Fi routers—to provide in-home 200 megabit-per-second broadband service. It charges about \$50 a month and shows the speeds customers get on the screen of a device in each home and on its customer app, a rare practice among internet providers.

With more than \$300 million in funding from firms such as KKR [KKR 0.93%](#) ▲ & Co. and Tiger Global Management, Starry has so far rolled out in Boston, Los Angeles, Washington, D.C. and Denver, and plans to expand into other urban areas.

Amish Jani, founder of venture-capital firm FirstMark Capital and an investor in Starry, says the fact that consumers often have little choice in their internet provider made backing an upstart in the space appealing. Roughly 90 million Americans live in areas served by only one high-speed broadband provider, according to an estimate from the Institute for Local Self-Reliance, a nonprofit organization in Washington, D.C., that advocates for sustainable community development.

Another provider, Honest Networks Inc., has deployed an internet service—using ultra-high-frequency spectrum and other companies' existing fiber—in 100 apartment complexes in parts of New York City and Jersey City, N.J.



Inside a chamber at the Facebook Connectivity Lab used to test the performance of antennas.

PHOTO: WINNI WINTERMEYER FOR THE WALL STREET JOURNAL

Honest Networks benefits from a partnership with real-estate-investment venture fund Fifth Wall that gives the company a foot in the door with landlords, an obstacle for new connectivity providers.

Honest says it doesn't share or monetize customer browsing data, a practice some traditional providers are exploring as a way to win over privacy-conscious consumers, and it doesn't place data limits or require contracts.

A spokesman for cable trade group NCTA says there is strong competition in the U.S. between wired and wireless broadband providers. "It's great that new entrants are exploring innovative ways of delivering broadband access to consumers, and we encourage them to dedicate their resources to reaching consumers in communities that currently don't have access to broadband networks," he says.

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How do you think the increase in competition from new internet providers will affect consumers? Join the conversation below.

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