Cheaper Fiber Deployments – And More of Them

Attendees at the FTTH Council Americas annual conference heard about surging deployment around the world and how to cut costs at home.

By Steven S. Ross / *Broadband Communities*

Attendees at the annual Fiber to the Home Council conference in Anaheim this summer feasted on cost-cutting deployment technologies, better business cases and the news that fiber is making big inroads in Europe, Africa and Latin America.

Market researcher Michael Render's new survey of 2,150 broadband consumers presented plenty of good news for FTTH deployers along with some caveats. Most important, the U.S. take rate for FTTH is now 47 percent. Though only 29 percent of consumers are aware of the term "fiber to the home," 84 percent are familiar with the concept of "fiber optic Internet."
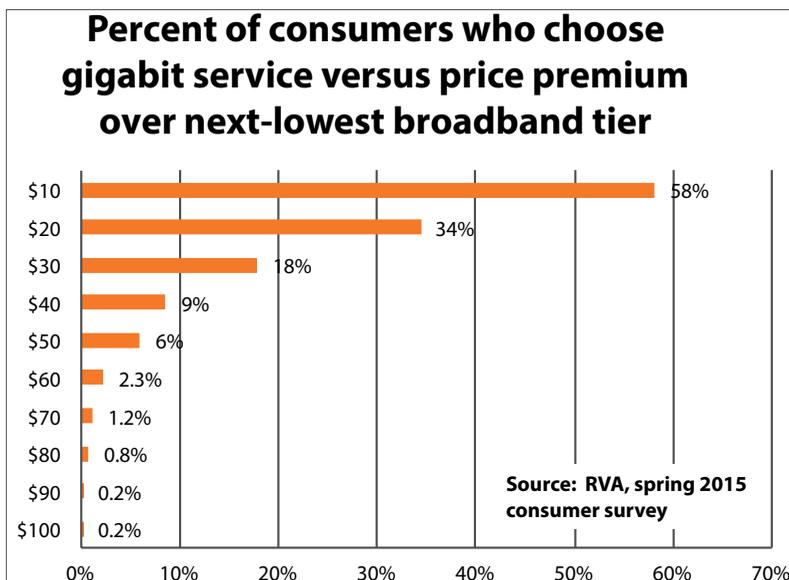
The term "gigabit Internet" is also familiar to some consumers (14 percent), and though gigabit service is price elastic – customers won't buy it if the price premium over good FTTH service, typically in the 25–100 Mbps range, is too high – offering gigabit service provides a halo effect that makes marketing other bandwidth tiers easier. Consumers know that gigabit service is there if they eventually need it.

Render said consumers are now spending six hours a day online, up a bit in the last year. Even smartphones are often connected to home Wi-Fi.

Reliability is as important as speed to customers, Render said. He noted that providers rate reliability higher than any other goal, but they do not believe consumers rate reliability and latency as highly as they actually do. Render added that fiber is so reliable and produces such high consumer satisfaction that no-contract FTTH services are attractive even though consumers' overall satisfaction with telephone companies has been declining.

THE INTERNATIONAL SCENE

Roland Montagne, market analyst for telecom at the European consultancy IDATE, was bullish on Latin American and European deployments. For Latin America, he listed 75 fiber-to-

Percent of consumers who choose gigabit service versus price premium over next-lowest broadband tier

Price	Percent
$10	58%
$20	34%
$30	18%
$40	9%
$50	6%
$60	2.3%
$70	1.2%
$80	0.8%
$90	0.2%
$100	0.2%

Source: RVA, spring 2015 consumer survey

Even a small price premium for gigabit service is a barrier to consumer uptake.

the-building (FTTB) and FTTH deployments by 58 providers. Most fiber customers are served by FTTH; only 9 percent of access is through FTTB. More than 85 percent of households and businesses in Barbados and Uruguay have access to fiber, he said. In Mexico, the number is 17 percent, not far below the United States, where 20 percent of homes (24.5 million) are passed with fiber.

In terms of technology, GPON dominates Latin America; 97 percent of ports are GPON and only 3 percent EPON. Take rates are generally low, however, and marketing emphasizes entertainment downloads. Upload speeds are not heavily promoted.

Montagne reported that 2014 marked huge successes for fiber in Europe, and homes passed increased to about 50 million. The number of homes passed is an uncertain statistic when many of the homes are in MDUs because gaining permission to deliver fiber to individual units may be difficult or impossible. However, Hartwig Tauber, director general of the FTTH Council Europe, added that the EU-28 nations had 12.3 million FTTH/B subscribers by the end of 2014, up from only 8 million at the end of 2013.

Tauber noted that the numbers do not include large FTTB deployments in Russia, which is not an EU nation, and that Germany and the U.K. have less than 1 percent fiber adoption. BT, the British incumbent telecom, aims to serve broadband through G.fast on loops as long as 300 meters. Deutsche Telekom's plans center on using a VDSL variant, 35b.

Tauber stated that it would take $210 billion to deploy fiber broadband to every building in Europe. The total is less than the $240 billion the EU loaned to Greece (and which is unlikely to be repaid).

Christine Beylouni, director general of the FTTH Council MENA (Middle East North Africa), said that every day, 154 km of new fiber is deployed in Africa. The total has more than doubled in the past five years.

VALUE OF FTTH

The FTTH Council Americas released a study it had commissioned that confirmed Michael Render's earlier estimates of FTTH's effect on housing values. Render's conclusion, based on consumer surveys, has consistently shown that fiber broadband adds value to dwelling units. His spring 2015 survey suggested an increase of 2.4 percent in value for a $300,000 home and 2.8 percent for a $200,000 home.

The FTTH Council survey, using a different methodology, found that

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ADVICE FOR DEPLOYING FIBER IN MULTIFAMIILY HOUSING

Michael Weston, executive director, Verizon Enhanced Communities: Identify the true owner of the building or the real decision-maker. In New York City, tracking down the true owner is not easy!

Barry Walton, formerly with Bell Aliant, now consulting for Magellan Advisors: Buildings are all unique. Determine building characteristics, design options and design decisions; communicate with customers and residents and only then write the implementation plan. The plan should cover getting fiber into the building, customer security and privacy.

Walton: Think creatively. One pathway to housing units is from the garbage chute room typically on each floor. If there is room, the hub box could be on mid-floor rather than in the basement.

Walton: Take lots of pictures for the designers back in the office.

Andre Kriger, FTTH Director, Telefonica Vivo Brazil: Do a lot of leafletting. Wine and cheese parties didn't increase penetration for us.

Kriger: Clear up customer complaints before you try to sell more customers.

Weston: When we first started to install, property owners were nervous about where the demark was and whether they could ever do away with us. FTTB ultimately topped out, so we're retrofitting 250,000 units in older deployments.

Weston: Owners with large property portfolios are nice because they have more experience and more business potential, but they are tougher to negotiate with.

Weston: Key negotiating issues include aesthetics, tenant inconvenience, special considerations for specific tenants or owners, and impact on the existing provider.

Walton: Try to wire everything; fiber the apartments along with the building because piecemealing is more costly.

Weston: Bulk service is growing. Bulk business has doubled recently for Verizon, but it's still well under 10 percent.

Weston: Marketing agreements, done right, are great. But we have them for only half our MDU builds.

Kriger: When you get close to capacity on fusion splice boxes, there's a bigger chance that splices will break.

Weston: Gamers want low latency, so wireless is unsatisfactory for them.

Kriger: Wi-Fi issues account for 20 percent of trouble calls.

fiber added 3.5 percent to home prices. The conclusion was based on 500,000 home sales during fall 2014 in 14 communities. The median home sales price was $175,000.

SDN VISION

Kurt Raaflaub, senior product marketing manager at ADTRAN, described the imperative for software-defined networks (SDN) in stark terms. With the growth in bandwidth demand, how does a provider add capacity where needed – to a new factory or commercial center, for instance – without laying down a new network spur? In theory, fiber and Ethernet should make the task easy. A provider can write a few scripts to control routers and switches, physically reconfigure a local distribution hub or two and maybe run a cable from the nearest trunk into the new building. However, these are tasks for specialized network engineers. What happens if the provider doesn't have enough fiber capacity in that part of the network?

Raaflaub noted that wavelength-routed PON is very efficient but not very agile. Instead, his solution is wave-selected PON, which allows every user to get any wavelength on a fiber. In many cases, this allows providers to increase bandwidth without touching the physical network at all – a few keystrokes provision the new customer.

This is one reason many network designers and vendors are so excited about SDN. It allows service segregation (a bank could have its own wavelength), capacity expansion (add a channel), dynamic load balancing (rogue detection and mitigation), energy efficiency, even easier OLT maintenance.

The next year should bring much NG-PON2 hardware, which will allow providers to more comfortably serve businesses and residences on the same fiber line. Providers can also phase in expensive wave-division multiplexing (WDM) and even more expensive wavelength-

tunable lasers to specific customers by overlaying even single P2P fiber. The expense is real but still cheaper than laying new fiber. Emerging SDN and network functions virtualization (NFV) tools should make management of the extra electronics easier as well. ❖

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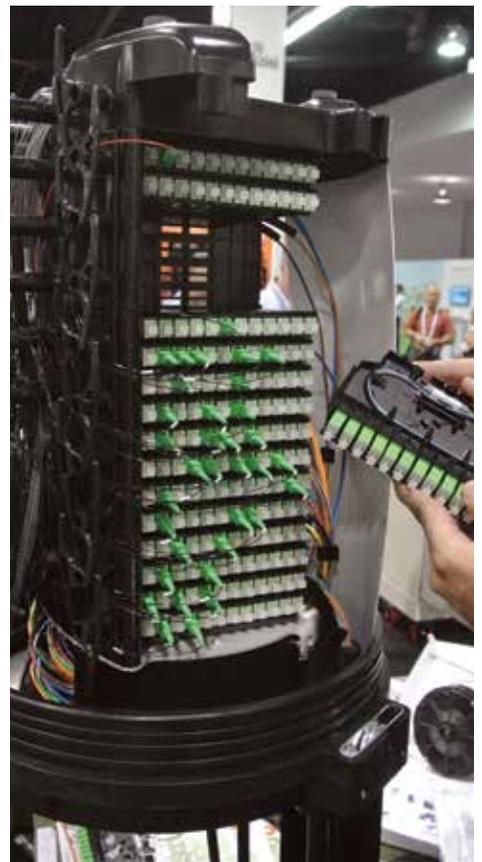
Photos From the Expo Floor

Exhibitors at the FTTH Conference showed new products that save space, time and power in fiber deployments.
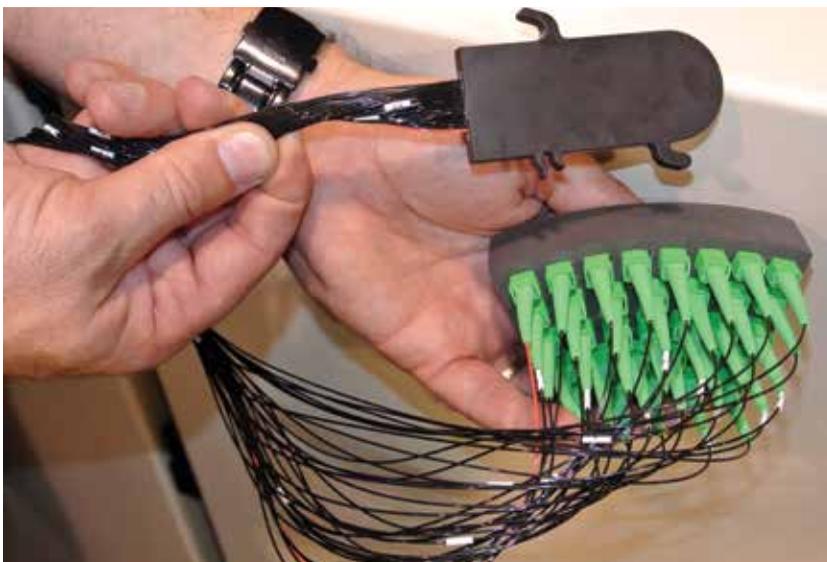
The Clearfield Makwa hub – perhaps the industry's most compact – uses a new high-density tray.

Clearfield's high-density pedestal uses one of its standard cassettes. This technician-friendly Clearview Black has an integral splicing tray and a jig that makes it easy to splice individual round fibers to a single ribbon cable.

From outside plant to inside – just strip off the outer protective coat of this 3M fiber when you pull the fiber inside, then attach it to a wall – or anything else – with the new Clear Track Fiber Pathway. The flexible, almost invisible trackway has an adhesive base, and fiber can be pressed between its two rows of nubbled fingers. The fiber can easily be peeled away from the trackway if needed, but the track itself stays attached permanently. 3M has a new roller tool to assist technicians in placing the fiber (only 0.9 mm diameter). This picture shows a prototype of the tool; the final product has a narrower flange that lets it get right up against moldings or adjacent surfaces at corners or ceilings.

Just 7.5 watts will power this compact RFoG node from PCT International.

3M's small Fibrlok integrated network interface box can accept new inside-outside plant fiber – the fiber passes through to inside the premises without splicing, if the deployer desires. Many fiber vendors are thinking the same way. OFS and Corning were among those that showed small-scale, technician-friendly boxes, fibers and raceways.
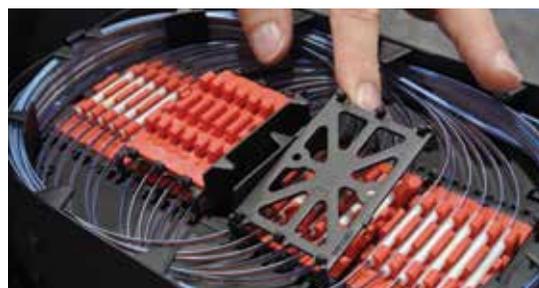
This 3M cassette is layered, with an extra mezzanine to store fiber. Layering is becoming a common feature. TE and Clearfield showed well-thought-out cassettes as well.