



Staying With Copper in a Fiber World?

BY RACHEL BROWN

“A PENNY FOR YOUR THOUGHTS?”

Ask that seemingly innocent question to a telco owner who's still using copper to run a DSL system, and the answer may be surprising. Like the poor penny, whose very existence and worth is questioned—modern-day pennies are not even solid copper anymore; they're mostly zinc—copper may seem like the antiquated, outdated dinosaur from another era, especially when compared to fiber and all its hotshot properties. But the penny is still with us and likely will remain so for quite a while, and the consensus among telecom experts and general managers is that the same is true for copper.

“I've been in telecommunications for the past 30 years, and every year, someone is saying that copper is obsolete, that it'll be gone within the next three years,” said John Cioffi, a former Stanford professor and founder of ASSIA Inc., a DSL software and services provider. “But copper is still here—it's not going away. Copper is an enormous asset. It has decades of useful life.”

Lee Ratliff, senior analyst of broadband and digital home for iSuppli Corp., a market research firm, pointed out that it's generally not prudent to do official projections beyond five years out, but he agreed with Cioffi that copper will still play a role going forward. “There's a good chance that copper will still have a place in the network in the next 10 to 15 years,” he said. However, he said, copper is slowly going away. “As of 10 years ago, copper started to be displaced. New construction is generally not copper.”

For new construction, fiber does have many advantages over copper, namely greater bandwidth and less maintenance. But for existing buildings (either homes or offices), most telecom experts and general managers agree that it often makes economical and logistical sense to use the existing copper network. ▶



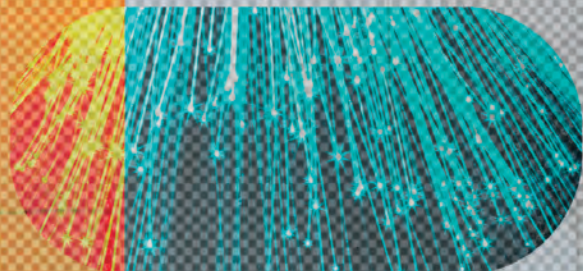
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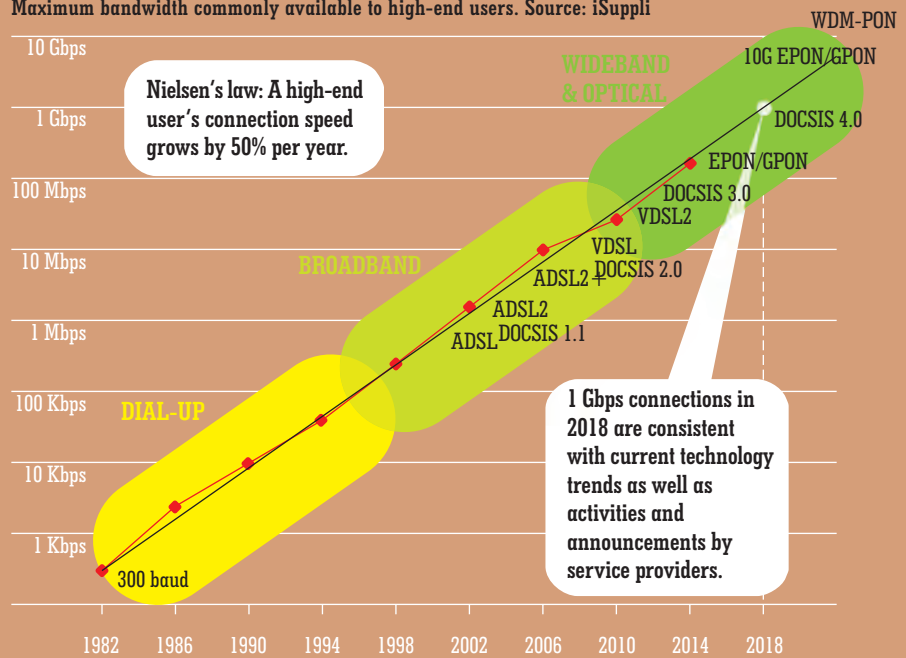
The Need for Speed

The real factor for determining when fiber will totally overtake copper comes down to how quickly consumers jump on the bandwagon for very high bandwidth, explained Lee Ratliff, senior analyst of broadband and digital home for iSuppli Corp., a market research firm. "Right now, there's very little adoption," he said. "There must be a new application to drive that demand."

In the past, there's been a logical path to bandwidth demand, Ratliff said. "At first there was data, but we knew that audio was coming. Once we had audio, video was next. There is nothing on the horizon now that is going to drive that demand." Nielsen's Law of Internet bandwidth stipulates that the consumer broadband access rate increases by 50% per year. "We've mapped this out over the past 20 years, and it's amazingly accurate," Ratliff said (see graph). "If you extend that out, that means that we could have 1 Gbps by 2018, but the question is: What's going to push us there?"

LAST MILE BANDWIDTH TRENDS FOR WIRED NETWORKS

Maximum bandwidth commonly available to high-end users. Source: iSuppli



Cost Considerations

In February 2010, the FCC issued a report that said that fiber costs \$2,500 per customer, Cioffi explained. "This includes all the equipment and connecting it to the house," he said. "That's the expensive, arduous part where you have to dig trenches and dig up sidewalks and rosebushes and actually bring it into the house." For rural telcos, that \$2,500 price tag for fiber could be on the low side. "We did a cost study of what it would cost to run fiber to the home," explained Harvey Souders, vice president/general manager of Sand Creek Telephone Co. (Sand Creek, Mich.). "It would cost us \$6 million, which works out to \$6,000 per customer. There's no way we could turn a profit or even recoup our costs."

For Hill Country Telephone Cooperative (Ingram, Texas), the cost to build out a totally fiber network would run \$237 million and take 12–15 years, said General Manager Delbert Wilson, adding that a total fiber network would be his dream. "It's a future-proof network in terms of longer life cycle and bandwidth capacity, but it would cost too much and take too long," he said. "We must use our existing technology the most efficient way to bring our customers service today."

Wilson also pointed out that not every customer wants fiber to the home. "We still have customers who want plain old telephone service," he said. "The common sense approach is to deploy fiber as you need to upgrade the network and to meet consumer demands. Let the market dictate."

Second Thoughts?

About five years ago, Verizon and AT&T announced plans to run fiber to the home, but even these telecom giants are now taking a step back from fiber, said iSuppli's Ratliff. "This was before the Great Recession, and now companies have to look at their investments very differently," he said. "They're no longer thinking that it's OK to break even in five to 10 years. They're thinking they

don't even have the luxury of two or three years to break even. They are forced to take a much more hard-nosed look at the numbers."

Ratliff speculated that if Verizon had the chance to rethink its FiOS (fiber optic services) rollout, it would probably not have gone down that road. "Verizon did not extend beyond their original 18-million-homes plan," he said. "Now, the strategy is fiber to the node or curb and then copper to the home. It's a much more affordable way to deploy services."

Ratliff added that this strategy represents 60% of the cost of a total fiber network and will be able to provide relevant services for the next 15–20 years. "This is what makes economical sense," particularly for smaller telcos, he said. "If the bigger telcos with deeper pockets are backing off from fiber to the home, it only stands to reason that the smaller telcos would do the same."

Optimizing Copper

Steve Timmerman, senior vice president of marketing for ASSIA, said there's no reason to say that fiber is better just because it's fiber, and copper is inferior just because it's copper. In fact, Timmerman said ASSIA challenges the conventional wisdom that fiber involves less maintenance, pointing out that some customers report that their fiber maintenance is just as high or higher than copper maintenance.

"There's a lot of headroom available in copper," Timmerman said. "In lab demonstrations, we can get copper up to 700–800 Mbps. With ADSL (asymmetric DSL), we can get up to speeds of 25 Mbps. With VDSL (very high-speed DSL), we can reach speeds of 50 Mbps and higher."

Jeff Heynen, directing analyst of broadband and video for Infonetics Research, a market research firm, said bonded VDSL2 can achieve 100 Mbps. "These new technologies can help operators deliver speeds over copper that are comparable to those offered by fiber," he said.



With copper, Timmerman said the speed variation depends on the loop length, or the distance from the DSL equipment to the home. "The longer the loop, the lower the speed and the more interference," he explained. Timmerman noted that ASSIA is a seven-year-old company that already serves 80% of the nation's DSL lines.

Hill Country, one of ASSIA's earliest regional users, has achieved speeds of 17–20 Mbps and is able to provide DSL coverage to 85–90% of its customers.

Pushing the Limits

Sand Creek's Souders agreed that it's possible to get high speeds out of copper. "We can get 5 Mbps to our customers, which is a good speed in the country," he said, adding that the telco may be able to push this up to 8 or 10 Mbps in the future. "We've upgraded our network, and the equipment in our remotes is kept current and updated. Four years ago, we could not have gotten 5 Mbps, but we can with the newer technology."

Tony Macey, general manager of Crown Point Telephone Corp. (Crown Point, N.Y.), said that his telco also has a hybrid network with fiber to the node and copper to the home. "Eighty-five percent of our customers can get 6 Mbps," he

said, adding that he believes this speed is sufficient and doesn't merit a switch to fiber. "The only real advantage of fiber is the maintenance issues. Copper corrodes, and it's susceptible to lightning strikes and water damage."

Macey explained that Crown Point installed its copper lines 15–20 years ago. "We're likely to get another 20–30 years out of it," he said.

Like copper lines, the penny has been around a long time (since 1793—it was the first coin produced by the U.S. Mint) and is still showing signs of life. In 2009, to mark the bicentennial of Abraham Lincoln's birth, the U.S. Mint issued four new reverse designs, replacing the traditional view of the Lincoln Memorial with images to represent four different stages of Lincoln's life. And just last year, a new reverse design—the Union Shield—was introduced.

These actions speak to telcos working with existing copper: a little reinvention, a polish, and something "old" can appear to be brand new all over again.

A penny for your thoughts, indeed.

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