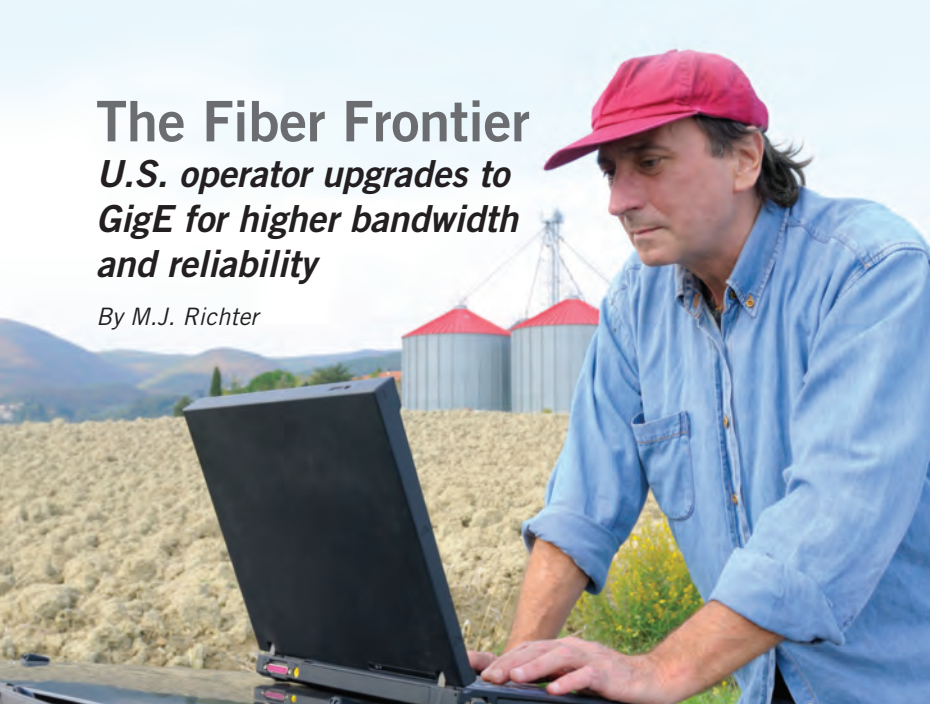


# The Fiber Frontier

## U.S. operator upgrades to GigE for higher bandwidth and reliability

By M.J. Richter



**Frontier Communications vows to extend 3 Mbps broadband service to at least 85% of its residential and business subscribers over the next 3 years. The company's Northwest Region in California and Oregon is leading the charge.**

As one of the first Frontier operations to upgrade its ATM-based access network to Ethernet transport, the Northwest Region is accelerating the speed of its existing Tellabs® 1000 Multiservice Access Platforms by installing Gigabit Ethernet uplink cards. As a result, customers will enjoy 3 Mbps to 6 Mbps DSL access speeds.

In fact, Steve Whitehorn, senior network engineer, says about 1,100 residential and business subscribers already have these faster DSL connections, and more will get them as the upgrade progresses.

Executives at Frontier headquarters in Rochester, N.Y., have approved the move away from ATM-based access and into native IP/Ethernet transport for all its legacy operations in 24 states — excluding assets recently acquired from Verizon.

Yet Whitehorn said it wasn't just marching orders from headquarters that prompted his region's initiative. Customer demand for higher speeds was a decisive factor, too.

By the end of summer 2010, the company will have added the GigE uplink cards and software to Tellabs 1000 platforms in 6 of its 44 central offices and 10 of its 500-plus remotes. Noting the Northwest Region is one of the first Frontier territories to upgrade their Tellabs 1000 platforms to Ethernet transport, Whitehorn said, "If the first segment of the upgrade goes smoothly, we'll continue to roll out to other areas."

### Leverage the Past While Moving Forward

Frontier is one of many U.S. carriers using the Tellabs 1000

platform, which converges voices, video and data traffic onto a single network. This architecture eliminates "box-on-box" solutions, reducing CapEx and OpEx and simplifying network management.

The Tellabs 1000 platform is designed to enable a cost-effective, seamless migration to next-generation networks. For example, it supports a wide range of transport needs, from standard POTS to T1/E1, ADSL 2+ and OC-12.

To help its service provider customers evolve their DSL- and PON-based networks to IP, Tellabs has released a high-bandwidth, cost-effective Gigabit Ethernet uplink interface for the platform's BPON OLT and broadband digital loop carrier

applications. With 2 GigE ports on a single card, the interface supports Ethernet traffic aggregation for high-speed Internet access and VoIP applications.

By installing the GigE card and software, service providers can remove their older ATM switches and use a less expensive, more reliable Ethernet infrastructure.

***"If you need help in designing these projects, get hold of your local Tellabs representative. They provided us with quite a bit of support."***

— Steve Whitehorn, senior network engineer,  
Frontier Communications

### 70 Miles of Fiber

To bring broadband to Frontier customers, the company had to put in new fiber-based intercity networks in 2 sections of its mostly rural territory.

"We're building a

70-mile-long fiber project through 3 counties in northeastern California this summer to replace an antiquated and exhausted microwave radio system," Whitehorn said. "Prior to this new build, we were unable to extend any additional broadband [services] to these areas.

"With this new fiber project and an upgrade to an existing fiber route, we're boosting our data backhaul to 10 Gbps in those 2 directions so we can do Gig backhauls to remotes.

"The GigE upgrades to the Tellabs 1000 platforms, combined with the 2 intercity networks, enables us to open the floodgates and provide the bandwidth our customers are looking for."

### Not Counting Out Copper

Frontier's West Region has a lot of embedded copper, which is in sufficiently good condition to help in the broadband makeover. Consequently, Tellabs is partnering with Actelis Networks to help Frontier deploy an Ethernet-over-copper solution.

Frontier is using both the Tellabs GigE card and its Fast Ethernet service card to interface with the Actelis solution in order to boost the copper bandwidth.

Mike Walker, an engineer working with Frontier, said: "Frontier has copper pairs available for broadband delivery about three-quarters of the time. The other times, we basically just replace the existing T1s: We use the same pair the T1s were riding on to provide the Ethernet over copper."

"Many of Frontier's remote serving offices are located relatively far from the nearest fiber facilities.

"So it only makes sense to take advantage of the copper facilities we have," Whitehorn said. "Most of these locations had existing IMA groups, so we're just converting those IMA groups to the Ethernet-over-copper."

**ADSL:** Asynchronous DSL

**ATM:** Asynchronous Transfer Mode

**BPON:** Broadband Passive Optical Network

**CapEx:** Capital Expenses

**DSL:** Digital Subscriber Line

**GigE:** Gigabit Ethernet

**IMA:** Inverse Multiplexing over ATM

**OLT:** Optical Line Terminal

**OpEx:** Operating Expenses

**POTS:** Plain Old Telephone Service

**VoIP:** Voice over Internet Protocol

"Because the repeater housings were all in place, it cost-justified bringing more bandwidth to these locations, as customers requested it," Whitehorn said.

Going forward, Frontier's West Region will cap its investments in ATM switches and "move everything new over toward the IP side of the house," Whitehorn said.

In fact, the first broadband application enabled by the upgraded Tellabs 1000 platform and the Actelis Ethernet-over-copper solution was a metro Ethernet connection to a hospital located in one of the company's larger markets.

"We used the GigE card and then used Actelis over copper for the last mile to the hospital, and it has worked very well," Whitehorn said. "Wherever that application fits, Frontier will use it to offer the type of Ethernet circuits our [business] customers are looking for."

Although pleased with the upgrade thus far, Whitehorn has some advice for his counterparts across the industry who may be contemplating similar upgrades.

"If you need help in designing these projects, get hold of your local Tellabs representative. They provided us with quite a bit of support, and we look forward to that continuing." ■

## Coming soon: a new Tellabs.com

The image shows a screenshot of the Tellabs.com website on a tablet. Several callout boxes with red arrows point to specific features on the page:

- Latest white papers and news:** Points to a news section at the bottom left of the page.
- Quicker access to solutions:** Points to the navigation menu at the top of the page.
- Choose languages:** Points to a language selection dropdown menu in the top right corner.
- Now includes product in 3D:** Points to a large video player area in the center of the page.
- Choose from video library:** Points to a video player area on the right side of the page.
- Quick links to Twitter, LinkedIn and Facebook:** Points to social media icons at the bottom right of the page.
- Share your views on Tellabs' blog:** Points to a social media sharing area at the bottom right of the page.