Planters Telephone Deploys Home-Run Rural Fiber

Savannah's economic growth presents an opportunity for the local telephone cooperative to build a next-generation network. One twist: Home-run fiber in rural areas.

By Masha Zager ■ Telecom Editor

Planters Telephone is a cooperative with two very distinct personalities. The southern part of its service area, in Effingham County, Georgia, is close to Savannah and is being transformed from rural to suburban by that city's economic growth. The northern area is still rural, with fewer than 20 inhabitants per square mile. "It's like two totally different plants," says general manager Stephen Milner. "The way you serve the southern region is not the way you design your plant in the northern region."

Planters, which serves about 10,000 customers in parts of two Georgia counties (Screven is the other), has made a major commitment to fiber-to-the-home. Ultimately, the company hopes to rebuild its entire service area with fiber – a project that will take many years. It has also formed a CLEC to begin serving nearby areas.

For now, however, it is deploying fiber in greenfield developments in its ILEC area and also overbuilding the copper infrastructure in the rural areas where there had been no economical way to provide broadband over copper. It is currently connecting an average of four homes a day to a Calix BPON access network at a cost very close to that of copper, and providing phone and broadband service with Internet speeds up to 6 Mbps.

But the service area's diversity has made the project more complex than anticipated.

Home-Run Topology in the Rural Areas

In the rural north, Planters is running fiber directly to homes. "We don't have a need for splitter cabinets there," Milner says. "We can use a larger fiber [cable] and dedicate a single fiber to every home all the way back to an office, and minimize the electronics and splitter cabinets in the field." While the company has traditionally used loose-tube cable, it is now migrating to ribbon cable, which carries more fibers and takes fewer splices.

Before concluding that it could avoid splitter cabinets, Planters tried several different network designs in rural areas. It found that splitter cabinets were so underused that they were more expensive than building fiber all the way out to homes in the first place. Milner explains, "You might have a light cabinet with two splitters, and if you only have 33 customers, you've tied up two splitters and two PON ports. If you're starting out from a hut, and you have six small light cabinets fed from that hut, and they each

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Truitt Zipperer from Counts Communications plows a fiber drop from a subscriber's yard back out to the road, with a cotton field in the background.

A Planters central office tech connects the first FTTH subscriber in Planters' ILEC territory. This splitter cabinet can ultimately serve 144 customers, but currently contains only one 1 x 32 splitter, hidden behind the technician's arm).

have partially filled splitters, each splitter takes a port on the PON card [optical line terminal]. But if you bring the fiber back to the hut, you get more efficiency on the PON card."

This home-run strategy requires Planters to spend more on fiber, but it saves money on electronics and on cabinets. And, as Milner points out, the electronics need to be upgraded every few years, while the fiber doesn't, so the tradeoff becomes more favorable over time.

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Part of Planters' motivation for bringing fiber to rural areas is that, as a cooperative company, it wants to give all its customers access to the same level of service. In areas where DSL was not feasible, he says, "customers just didn't understand… why their neighbor could have it and they couldn't." With fiber, all areas will eventually have access to the same high-speed Internet and high-definition video service.

In fact, when it overbuilds a rural neighborhood, Planters converts all the homes there to fiber even if the current owner wants only telephone service. Even though the company must pay for additional optical network terminals (ONTs), the expense of the ONTs is justified by the savings in customer service costs.

"When we get a call, the customer service rep won't know with DSL what the customer can receive at the home, and with TV service it's worse," Milner says, explaining that the rep would have to refer the question to the engineering division and possibly require line verification. "If they know the street is all fiber, they know right away what is available."

A worker from Counts Communications locating a fiber drop. He has marked an existing utility line with an orange stripe so the fiber crew won't cut it.

A worker from the Jim Young Construction Company plows a 144-fiber cable and two 1.5-inch ducts for a fiber backbone that will bring FTTH services to the city of Sylvania, in Planters' CLEC territory. Planters chose to put all of its fiber underground rather than stringing it along the city utility poles visible here because the large pine trees also visible in the picture tend to fall across the poles during storms. Putting fiber underground is relatively inexpensive because of the quality of the soil, and maintenance costs are far lower for underground plant.

Splitters in the Savannah Metro Region

In the Savannah area, new developments of 400 to 500 homes are springing up rapidly and a 1500-home development may arrive soon. "It's hard to come out of the office with fiber that's large enough to do a point-to-point scenario" for a 400-home development, Milner says, and as for the 1500-home development, "that's an exchange to us – there's no way to plan for it coming out of a building." In these developments, Planters is deploying a more traditional PON architecture, with cabinets and splitters in the field.

Another technology that Planters has found useful, especially in new developments, is Corning Cable Systems' OptiTap Connector, a hardened connector that is designed for use in the drop cable portion of a pre-connectorized network. The OptiTap is used along with Corning's MultiPort Terminal. "We'll pull those MultiPorts in and use OptiTap drops, and it's as easy as screwing it in," Milner says. "I could go out and do that."

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The MultiPort/OptiTap not only saves the cost of skilled fusion splicers; it also reduces the time it takes to make the connections and virtually eliminates the possibility of error. Even more important, in new developments, the MultiPort/OptiTap arrangement allows Planters to share the power company's conduits all the way to the home, and avoid plowing trenches for drop cables. Milner says, "We connect back at the MultiPort, and we're ready to go. It speeds up the process greatly."

The rollout of fiber in the metropolitan region is driven by competitive factors rather than equity. It wouldn't be a problem to provide DSL service for customers in new subdivisions, but fiber is more likely than DSL to compete with the cable service offered by Comcast.

Looking Forward

Eventually, Planters intends to migrate its electronics to GPON, but it is in no hurry to do so yet. Bandwidth over BPON hasn't yet become an issue, in part because the splitter ports are not yet full and in part because it still hasn't gone live with video services.

When the company does install GPON, it will be able to do so simply by changing cards in the central office. No truck rolls to the customer premises will be required, since the Calix ONTs are automatically upgradeable to GPON.

For the CLEC area, Planters is testing the ADTRAN Total Access 5000, a multi-service access and aggregation platform with a pure Ethernet core, which would support a GPON solution.

IPTV video service, which will be provided over both copper and fiber, is still in beta testing. Planters plans to use IP Prime, a service that is provided to small telcos by the National Rural Telecommunications Cooperative in partnership with the National Telecommunications Cooperative Association and SES AMERICOM. IP Prime delivers a total programming solution, including

high-definition content, using a "virtual headend" approach that allows telcos to minimize their capital expenditures.

One issue that remains to be resolved, particularly in the rural areas, is getting power to the ONTs. In new developments, Planters requests that developers locate a power outlet near the electric meter – which works well as long as the developer is aware of the requirement. Older houses in overbuild areas may not have power on the outside wall. When there is no outlet on the outside wall, the company must place the battery pack inside the house or in the carport and drill through a wall, a situation that raises potential liability issues.

A solution under consideration is to have the local power companies place collars on the electric meters to support power conversion and battery packs. One of the local power companies has agreed to trial this solution, using an Alpha Technologies collar, which would allow Planters crews to install the ONT without actually entering the home.

In-Home Wiring

The most variable and unpredictable costs of deploying FTTH involve in-home wiring. "We don't know what we'll find when we get to the home," Milner says. For older homes, the company's electricians have to work with homeowners to upgrade their electrical systems.

Even new homes aren't problem-free. In addition to convincing developers to put outlets on the outside walls of new homes, Planters has also been trying hard to persuade them to use structured (network) wiring. Until recently, homes in the Savannah-area subdivisions were selling so quickly that developers didn't have to bother with "extras" like structured wiring. With the recent market slowdown, many developers are looking for opportunities to differentiate their products, and some of them view fiber as a differentiating factor. Milner says that about half of the developers – including most of those based in the area – are now willing to work with Planters to design low-voltage wiring and electrical outlets that support FTTH. "The half that won't is what causes us heartache," he adds.

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Suppliers:

ADTRAN	www.adtran.com
Alpha Technologies	www.alpha.com
Calix	www.calix.com
Corning Cable Systems	www.corningcablesystems.com
SES Americom	www.ses-americom.com

Because the housing market is still "hot" relative to most parts of the country, new developers keep arriving in the area, and many of them need to be educated about FTTH. Milner has met with developers, taken them to see examples of properly wired and not-so-properly wired homes, and handed out copies of the Telecommunication Industry Association's 570b wiring standards. "It's slowly getting better," he says with resignation. "But it hasn't changed things overnight." **BBP**

About the Author

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