

FROM THE PRESIDENT



In my time with Finley Engineering, the company has experienced incredible growth. We have more than 200 employees here at Finley, and continue to grow. That growth is made possible by working with great partners on projects across the country.

At Finley, we work hard to stay at the forefront of new technologies and industry practices. And we hope to share that way of doing business with our clients. We hire innovative, hardworking people to employ that mindset in the field.

It's an exciting time at Finley Engineering, and I look forward to a future of continued growth and partnership with our clients.

Enjoy the issue.

VDSL2 & FIBER-TO-THE-HOME ALTERNATIVES

The biggest buzz in the telecom industry lately is Fiber to The Home (FTTH). FTTH has been billed as the superior network architecture, delivering an average data rate of approximately 30 to 70 megabytes per second and replacing the traditional copper loop. However, there are several cost considerations to keep in mind when deploying FTTH systems. In many cases, FTTH isn't an economical option.

Telephone companies operating copper loop plant systems still have options for high speed data networks. The latest generation of very high bitrate DSL (VDSL2) offers telecom customers the same advantages of FTTH, but functions on copper loops rather than requiring the installation of new infrastructure and the accompanying high initial investments.

Vendors are starting to provide limited pricing for VDSL2 line cards. However, it has yet to come to market and telecoms have limited deployment experience with it. But, as with all new systems, there are trials underway to better understand infrastructure needs as the industry prepares to implement VDSL2 later this year. VDSL2 has been adopted by a number of large carriers and those carriers are on the forefront of preparing for its deployment.

Despite the drawbacks associated with any young technology and the learning curve required by technicians in the industry, there are considerable benefits for some rural

customers using VDSL. Existing infrastructure can be utilized, rather than abandoned. And, by avoiding a new installation, there are fewer upfront costs associated with VDSL2.

VDSL2 supports pair bonding, which can deliver data rates as high as those delivered by FTTH by using two VDSL2 line card ports, along with two copper pairs and a special VDSL2 modem to terminate the transport system. Properly engineered VDSL2 systems

can provide bandwidth comparable to either Active Ethernet or a GPON-based FTTH system, using the existing copper cable loops.

VDSL2 benefits are most noticeable on copper loops under 3,000 feet. Above 7,000 foot copper loops, VDSL2 provides no additional bandwidth gains beyond existing ADSL 2+ technologies. This limits the application in some rural areas, but the 3,000 foot loop limit fits many small to mid-sized town applications, and even larger towns that may have previously deployed fiber to the node (FTTN) technologies that reduced the copper loop length.

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DID YOU KNOW FINLEY ENGINEERING:

Has nine offices strategically located to serve your needs

Celebrated 55 years in business in 2008

Employs over 200 highly qualified employees

Has 12 registered professional engineers on staff

Has professional engineering staff collectively registered in 36 individual states

Placed its 4,000th mile of Fiber to The Home in 2008

Passed its 25,000th home in 2008

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Most vendors will offer VDSL2 line cards that can replace existing ADSL, ADSL2+ and VDSL line cards, making it possible to retain much of the existing broadband loop carrier system. As the technology comes online, vendors will be able to offer more pricing and technical information to those who are interested in VDSL2.

DECISIONS,

Before performing the field design of a project, the service provider and engineer must make several choices about the network interface device (NID/ONT) to be used at the premise. Determining what will best fit the specific needs of the premise, the technicians who will maintain the network and the occupants of the premise once the project is complete will help the owner and technicians select the right NID/ONT.

Determining which capabilities are needed of the ONT is the first step, as this will also determine which manufacturer models will meet the property owner needs. Is the building site a single family home? An apartment or office space? What services and how many phone lines will the residents require? Once these questions are answered, the appropriate manufacturer can be selected. At that point, the field designer can make remaining decisions regarding the location of the ONT.

Indoor versus outdoor installations

Just the location of the ONT can be an issue unto itself. Before deciding whether or not the ONT will be installed indoors or outdoors, there are structural concerns to be taken into consideration. First, is the installation being performed at a new building site, or on an existing structure? The location of the power source is a key factor, and older structures often have limited access to power sources. If this is the case, the phone company is often obligated to contract a qualified electrician to perform the electrical work to install an electrical outlet for the ONT power supply.

In addition to structural concerns, there are pros and cons to weigh when making the decision between an indoor and outdoor installation. Indoor ONTs offer increased security, which is beneficial at public locations like banks, post offices and courthouses. If the site is a private residence, however, there are certain drawbacks to an indoor installation. Multiple crews installing drops, NIDs and splicing have to coordinate times to access the site, which can cause multiple disruptions for the property owner. This can become both a customer service concern and a logistical headache.

CALENDAR

Montana Annual Showcase

November 26-27, 2008
Billings, MT

North Dakota Assn. of Cooperatives Annual Meeting

December 1-3, 2008
Bismarck, ND



Michael "Bo" Bojanski has joined Finley Engineering as the Director of Human Resources.

He has more than twenty years experience in human resources, including training, talent management, employee relations and benefit design.

In his role with Finley Engineering, Bo will deal not only with the constantly changing human resource arena, but also be charged with developing the Finley Academy, designed to provide training for internal staff, keeping them updated with the latest developments in the energy and telecom industries. Finley Academy will provide external training for client companies, as well.

Previously, Bo has held senior level H.R. positions with Huntel Systems, Physicians Mutual Insurance Company and Cox Communications. He is also an adjunct faculty member at Methodist College in Omaha.

Bo earned his Masters in Human Relations from the University of Oklahoma and his Bachelors of Science from the University of Nebraska at Omaha. He lives outside of Fort Calhoun, Neb., with his wife Cindy.



DECISIONS

Compared to indoor installations, outdoor installations are much more accessible for the construction crews and inspectors. It also makes troubleshooting easier, as technicians can address the concern without disrupting the property owner. Both types of installations have issues in locating a suitable power source and access to an acceptable electrical ground. Finding an appropriate indoor location with easy access becomes difficult in finished basements, mobile homes and small condos.

Grounding, bonding and choosing the right drop

Once the location of the installation has been determined, the telephone company must decide whether to use armored or dielectric drops. Armored drops are often the choice for outdoor installations, as they're protected from weather and gnawing rodents. However, the metal sheath in armored drops makes it necessary to bond them to an acceptable electrical ground, in order to prevent stray voltage issues. The bonding must be done in accordance with Article 800 of the National Electric Code (NEC).

While dielectric drops reduce the issue of unwanted voltage entering the premise, they do require additional measures of protection

from rodents and other potential sources of damage. The additional protection is usually accomplished by placing conduit or duct. This makes for a more expensive installation but can save time in the event of a cut. Ultimately, drop makeup should be selected after considering exposure to weather, animals and other conditions at the customer premise and the long term goals of the service provider.

Thorough communication with property owners to accurately identify their needs ensures the right ONT will be selected, and properly installed. Most importantly, all regulations regarding bonding and grounding should be carefully followed to protect the technicians and occupants.

