

BROADBAND COMMUNITIES’ 20th Annual List Of Leading Broadband Technologies and Services

The latest offerings from top broadband hardware and software suppliers, distributors and service providers

CALIX

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Contact: Carl Meyerhoefer

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Customers: Telcos, Cable TV, Municipalities, Electric Co-ops

Products/Services: Customer-Premises Equipment



CenturyLink technology (including fiber), services, features and offers are not available everywhere.

CENTURYLINK

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Customers: MDUs/PCOs

Products/Services: Internet and Video Services/Programming



CenturyLink ON is our recommended customer solution for properties and communities, giving them an edge over their competition. Wi-Fi ready your property. Residents can access Wi-Fi the moment they move in and easily sign up for home entertainment services.

CHARLES INDUSTRIES, LLC – AN AMPHENOL COMPANY

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Customers: Telcos, Cable TV, Municipalities

Products/Services: Passives – Outside Plant, Customer-Premises Equipment



Charles Industries' new Fiber Optic Dome Closures (FODC) are readily available, cost-effective, fiber splice solutions developed to

help users complete their FTTH projects on time and on budget. The FODC family of closures comes in three sizes. FODC-A is a small closure offering a 144-splice capacity. FODC-B is medium-sized and can accommodate up to 288 splices. The third size, FODC-AS, is a drop dome closure that incorporates an internal SC adapter frame and up to 48 splices available with integrated 1x4, 1x8 or 1x16 PLC splitters for distributed split architectures.

These environmentally sealed, robust solutions use economical compression sealing technology that provides an IP68 rating to allow use for any deployment topology, including aerial, pole, wall or pedestal mounting, as well as below-grade in a handhole or vault. FODC ship fully configured with splice trays, sealing grommets and all other needed accessories to install, seal and splice fibers. For more information, visit www.charlesindustries.com/main/te_fodc.html.

CLEARFIELD, INC.

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Customers: MDUs/PCOs, Telcos, Cable TV, Municipalities, Electric Co-Ops, Government

Products/Services: Active Electronics – Wireline, Passives – Outside Plant, Passives – Inside Plant, Customer-Premises Equipment, Optical Fiber and Cable

Designed to streamline and ease FTTH deployments, Clearfield's Home Deployment Kits include everything you need to connect a home to fiber – all in one box. Truck rolls are minimized and turnup is fast, reducing installation time by up to 30 minutes per home.

Home Deployment Kits complete the fiber connection from outside the home to the customer equipment inside the home. Because home styles vary greatly, different types of



fasteners are needed to attach fiber. Clearfield packages all the necessary fasteners in one convenient kit.

For consumers willing to take a do-it-yourself approach, the Home Deployment Kit enables a contactless installation, keeping residents and fiber technicians at a safe distance.

Home Deployment Kits include four choices of an outside plant test access point. In addition, every Home Deployment Kit includes a consumer-friendly CraftSmart Fiber Outlet for inside wiring, fiber patch cords and FieldShield drop fiber as needed.

PRIVATE EQUITY GROUP LOOKING TO INVEST –OR– PURCHASE

BROADBAND INFRASTRUCTURE SYSTEMS AND/OR PROVIDE EXPANSION CAPITAL

- CATV Systems
- Fiber Systems
- Telcos
- Wireless Systems
- Municipal Networks
- Data Centers



If you are interested in monetizing your investment or seek expansion capital, please contact:

512-266-1440

Or send a message to both emails:
chris@cbyson.com • scott@widham.com

CORNING OPTICAL COMMUNICATIONS

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Customers: Telcos, Municipalities, Electric Co-ops
Products/Services: Passives – Outside Plant; Passives – Inside Plant; Passive Optical LAN; Planning, Design or Construction; Training; Optical Fiber and Cable

Introducing Evolv Solutions with Pushlok Technology – this is the FTTx preconnectorized breakthrough you've been waiting for. It's all you need, wherever you connect. The Pushlok connector is an entirely different hardened connector form factor with a compact, durable, craft-friendly design. The single-fiber connector leverages an SC APC-compatible ferrule; is backward compatible with widely deployed, threaded OptiTap ports with a field-installed adapter, and can be converted for use with standard SC APC patch panels. Evolv terminals are a quarter of the size of conventional preconnectorized products and designed to go anywhere – on poles, facades or strands and in pedestals and handholes. Maximize the flexibility and minimize the stress of your FTTx deployment. Save time, save space, save infrastructure, save inventory. Less of everything, except quality – Evolv Solutions enable up to \$500 in savings per location.



DISH FIBER

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Customers: MDUs/PCOs
Products/Services: Internet and Video Services/
Programming

DISH Fiber is a game-changing, managed Wi-Fi solution for multifamily communities that provides all residents with immediate access to premium, gig-enabled Wi-Fi and live streaming TV upon move in. Residents benefit from reliable and secure Wi-Fi networks accessible propertywide and 24 channels of live streaming TV, as well as the option to easily upgrade programming and entertainment equipment

at reduced prices. For owners, DISH Fiber provides the opportunity to increase net operating income by offering internet and TV through a fee revenue model that beats traditional revenue sharing every time. DISH Fiber also provides a common network for connecting property-managed smart devices that help increase operational efficiency and make units more attractive to residents. Delight your residents and boost your bottom line with a communitywide Wi-Fi and TV solution from one nationwide provider with DISH Fiber. One network, endless possibilities.

ESPI

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Customers: Telcos, Cable TV, Municipalities, Electric Co-ops
Products/Services: Active Electronics – Wireline, Active Electronics – Wireless, Customer-Premises Equipment, Other Managed Services

Quality Products. Simplified Installation.

During the planning process, what are the most important qualities you look for in an uninterruptible power supply (UPS) before deploying to your network?

If you pose this question to plant managers or field technicians, both ease of installation and product quality generally tends to be near the top of their list. Why? They are busy. It is imperative to finish the job quickly and move on to the next, without having to return for any follow-up repairs.

Cutting down the duration of time technicians spend on-site and reducing the number of future truck rolls is a measurable goal for any telco operation. The implementation



of quality, longer-life UPS equipment that is easy to install and improves network resiliency is one of the easiest ways to achieve that goal.

During the design and build phase, the network designers should consider the overall long-term costs once the system is deployed. When reviewing costs, it is tempting to eliminate UPS units from the network design or choose a cheap one, but this inevitably leads to increased truck rolls and time on-site – making the “cheap” solution turn into the “costs-a-fortune” solution in the long run.

In previous years, a 30-minute disruption in service may have been acceptable. But in today’s world, making compromises on the equipment powering your network has the potential of affecting your customers’ livelihoods. Thus, the utilization of reliable, easy-to-install back-up power equipment to the residence or business is vitally important.

For solutions to your UPS needs and input during the design stage, visit www.espicorp.com. You’ll find a number of solutions and alternatives and contact information for sales and production engineers.

FINLEY ENGINEERING COMPANY, INC.

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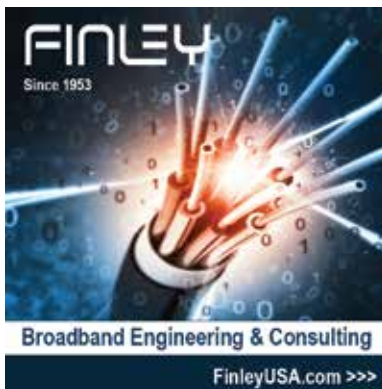


Customers: Telcos, Municipalities, Electric Co-ops

Products/Services: Other Managed Services; Planning, Design or Construction

Broadband is no longer a luxury. It’s a necessary utility, as the COVID-19 pandemic made apparent. Whether you’re a rural electric cooperative, a municipality, a telecommunications company or another organization exploring fiber opportunities, your goal is the same:

find the optimal way to bring high-speed broadband to your community and close the digital divide. After more than 67 years and hundreds of implementations, Finley has seen just about everything, and crafted the right solutions for even the toughest deployment challenges. We are with you from beginning to end, starting with building a business case, finding funding and identifying the right technical approach. Then we see your project through to the end, becoming a trusted extension of your team. We stand beside you, rolling up our sleeves and tackling the challenges with you, every step of the way.



HEXATRONIC

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Customers: MDUs/PCOs, Telcos, Hospitality, Municipalities, Residential

Products/Services: Optical Fiber and Cable



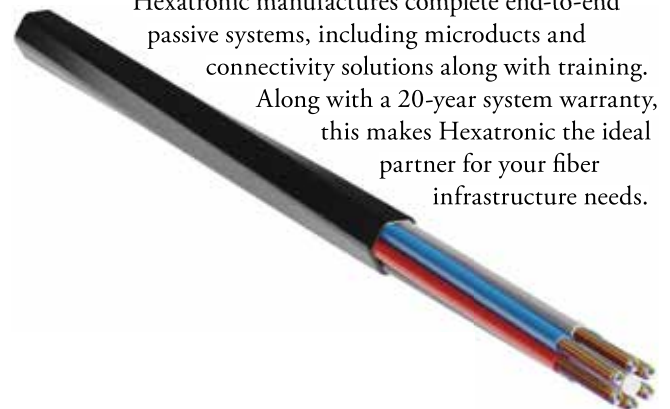
Viper and Raptor Take a Bite Out of Fiber System Costs

Hexatronic offers a full line of blown-fiber microcables with demonstrated highest levels of performance and reliability. Compared with traditional fiber cables, microcabling systems provide overall lower labor costs and a reduction in materials and installation time with the fastest blowing speeds. Hexatronic’s series of Viper microcables and Raptor nanocables offer the smallest size and longest blowing distances.

Viper microcables are based on a slim, loose tube design with up to 12 polyimide tubes per cable, carrying up to 432 total fibers. These robust cables are ideal for long-distance, air-blown installations in microducts with an inner diameter range of as little as 5.5 up to 16 mm. The Viper cables have excellent bend performance, are impact-resistant and perform in an extremely wide temperature range (-45 degrees Celsius to +70 degrees Celsius). Compared with other cables installed in larger ducts, the Viper series also lowers costs of handling and transportation.

The slim nanocables in Hexatronic’s new Raptor series can be installed in microducts with an inner diameter of 3.5 to 12 mm and fiber counts to 24. Nanocables minimize the initial investment and at the same time provide a future-proof network that is easy to expand, upgrade and maintain. Their main applications are fiber-access networks, such as FTTH and FTTA. With an integrated strength member that adds increased stability and robustness, this cable is ideal for blowing up to 1 km or more. For short distances it can easily be pushed by hand.

Hexatronic manufactures complete end-to-end passive systems, including microducts and connectivity solutions along with training. Along with a 20-year system warranty, this makes Hexatronic the ideal partner for your fiber infrastructure needs.



HOT PRODUCTS

IQGEO

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Customers: MDUs/PCOs, Telcos, Municipalities, Electric Co-ops

Products/Services: Passives – Outside Plant; Passives – Inside Plant; Planning, Design or Construction; Customer-Facing Software

Unparalleled Port-to-Port Documentation

Improve the operations of your fiber network by moving from messy spreadsheets and drawings to the intelligence of OSPInsight. With an OSPInsight documented network, you can plan and design new parts of your network, run reports on the relationship between network elements, and explore details of a route from port-to-port with ease.



KGPCO

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Customers: Telcos, Cable TV, Municipalities, Electric Co-ops

Products/Services: Active Electronics – Wireline; Active Electronics – Wireless; Passives – Outside Plant; Passives – Inside Plant; Customer-Premises Equipment; Structured Wiring; Passive Optical LAN; Test Equipment; Planning, Design or Construction; Optical Fiber and Cable

KGPCo can help build a broadband network that is scalable, flexible, cost-effective and secure. With more than 45 years of telecommunications experience, thousands of OEM partners, \$2,350 million-plus in inventory and a nationwide network of distribution centers, we have the supply chain and installation services to build and maintain your network and connect your customers. Learn more at www.kgpc.com.

MAXCELL

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Future Network Flexibility

Customers: MDUs/PCOs, Telcos, Cable TV, Hospitality, Municipalities, Electric Co-ops

Products/Services: Passives – Outside Plant, Structured Wiring

MaxCell Premise is our latest product innovation for in-building and confined-space applications.

MaxCell Premise meets all specifications needed for in-building enterprise applications, data centers or confined-space builds, including being UL 2024 (OFCR FT-6) listed, low smoke, zero halogen (LSZH), fire retardant and halogen free.

The newest MaxCell Premise products are made for use in ducts ranging from 1.25 inches to 4 inches in diameter. Configured in one- to three-cell packs, each cell has different-colored pull tapes pre-installed for simplified installation. MaxCell Premise is also available in a self-supporting version, with a strong and flexible pre-installed, integrated, galvanized support wire.

Where the cable pathway is overly dense and space is at a premium, MaxCell Premise allows new cables to be installed easily, eliminating the need for rigid conduit. In cases of short runs, cables often can be pulled into place by hand, saving time and expense.

OFS

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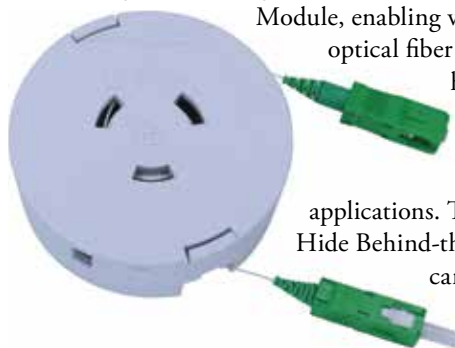
A Furukawa Company

Customers: MDUs/PCOs, Telcos, Cable TV, Hospitality, Municipalities, Electric Co-ops

Products/Services: Optical Fiber and Cable

Boost Your Bandwidth Behind the Wall

Introducing the InvisiLight EZ-Hide Behind-the-Wall Module, enabling virtually invisible optical fiber installation inside homes and multiple dwelling units, or for passive optical LAN applications. The InvisiLight EZ-Hide Behind-the-Wall Module can further reduce the footprint of InvisiLight



ILU installations by up to 50 percent by hiding the spool behind the wall and using the InvisiLight 600 micron fiber. The original InvisiLight ILU Solution offered an innovative yet simple process to reach indoor optical network terminals (ONTs) by adhering a 0.9 mm diameter optical fiber into the crevices along ceilings and walls or moldings and walls. The InvisiLight EZ-Hide Behind-the-Wall Module uses an even smaller 0.6 mm optical fiber and installs with the same simple process and tools as the original. The compact EZ-Hide spool can dispense up to 40 meters of fiber as it is moved along the deployment path to the ONT location yet still fits inside a common behind-the-wall gang box.

POSITRON ACCESS SOLUTIONS

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Customers: MDUs/PCOs, Telcos, Cable TV, Hospitality, Municipalities, Electric Co-ops
Products/Services: Active Electronics – Wireline, Passives – Outside Plant, Customer-Premises Equipment



Deliver gigabit services at 20 percent of the cost to residents in brownfield buildings in hours.

High-speed bandwidth is an essential need for everyone, especially with telework, remote learning and entertainment needs. High internet speeds increase property values by 3 percent and rents by up to 8 percent. Carriers can deliver bandwidth to these buildings but cannot distribute it to the occupants without costly capex and disruptive construction to install in-building fiber. DOCSIS cannot deliver adequate bandwidth.

Positron's G.hn access multiplexor (GAM) extends fiber or fixed-wireless gigabit services in 90 percent of residential buildings not wired with fiber. G.hn delivers gigabit services over existing in-building wiring of MDUs and MTUs to each



door (up to 800 feet on existing telephone pairs or 2,800 feet on RG6 coaxial cable and splitters). The GAM is a carrier-grade, MEF CE 2.0-compliant, fully featured proven product in service at many carriers. It delivers real-time gigabit speeds and has dynamic bandwidth allocation. It is also used for managed business services and can effectively serve mixed-use buildings. Increasingly, the GAM helps counties and owners of subsidized and assisted-living units cost-effectively close the digital divide.

For outdoor deployments, it is used with reverse power feed (eliminating the need for local power) to serve home clusters and for Rural Digital Opportunity Fund deployments using existing outdoor wiring from the curb into the home.

The GAM is scalable and cost-effective even with minimal initial subscriber take rates. It is less complex to deploy and operate than G.fast, GPON or DOCSIS. It is installed and activated in hours and is ideal for telcos, cable companies, ISPs, municipalities and property owners.

Developed, manufactured and supported in North America.

SPECTRUM COMMUNITY SOLUTIONS

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Customers: MDUs/PCOs
Products/Services: Internet and Video Services/ Programming



THE BEST ENTERTAINMENT FOR YOUR RESIDENTS

Spectrum TV offers the best-in-class entertainment options available to your residents, providing excellent value for your property.



Spectrum Community Solutions is adapting to consumer trends to provide your residents with innovative services. The Spectrum TV app gives residents the latest and greatest entertainment, making your property a hot commodity with 300 Live TV channels and more than 30,000 on-demand TV shows and movies.

The Spectrum TV app is an IP video solution, which removes the need for Spectrum receivers. The app can be downloaded on Apple TV, Samsung Smart TV or iOS Android mobile devices. Residents can also access on SpectrumTV.com. The app or browser recognizes when a customer is connected to the property Wi-Fi, so residents can simply open the app or a browser to instantly watch TV without having to manually sign in.

HOT PRODUCTS

WESCO/ANIXTER

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Customers: MDUs/PCOs, Telcos, Cable TV, Hospitality, Municipalities, Electric Co-ops

Products/Services: Active Electronics – Wireline; Active Electronics – Wireless; Video Headends and Related Equipment; Passives – Outside Plant; Passives – Inside Plant; Customer-Premises Equipment; Structured Wiring; Passive Optical LAN; Test Equipment; Planning, Design or Construction; Training; Back-Office Software; Optical Fiber and Cable

WESCO® | **ANIXTER**



WESCO and Anixter can help streamline your project with a variety of end-to-end supply-chain solutions that will save you time and money, including warehouse staging, material staging (both on-site and off-site), product kitting, just-in-time delivery, VMI services, project planning/management/make-ready, cable cutting and customized e-commerce solutions. Our unmatched customer service and account management professionals ensure your fiber build projects stay on budget and on schedule.

If you're establishing a new fiber network or expanding an existing one, our decades of experience will help you get



WESCO® | **ANIXTER** | **TVC**

the job done right. Building on our long-term reputation as a leader in end-to-end solutions for fiber optic networks, WESCO and Anixter have the innovative products and services as well as the expertise to help you meet the exploding demand for bandwidth and capacity.

No matter what your fiber network's size or architecture is, WESCO and Anixter have a vast portfolio of field-proven products to meet your project needs. Our knowledgeable product management team has the experience and problem-solving capabilities to connect you to the right solution for your project. We can assist in technology selection, bill of materials creation, product training, on-site installation and troubleshooting. Visit www.tvcinc.com/c/fiber-simple-fiber-experts.

WIDEPEN NETWORKS, INC.

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Customers: Municipalities

Products/Services: Other Managed Services; Planning, Design or Construction



WideOpen Networks designs, builds and operates the world's best open-access networks. We can design and build fiber to the home, high-performance fixed-point wireless networks, and fully integrated hybrid fiber/wireless networks. During 2020, we continued to provide our managed networks services 24/7/365 to nine networks in three states without any staff or network downtime.



Our network design services include network technical design, business model development, financial planning, staffing plans, operational expense projections, and full network operations plans.

For communities seeking assistance with the development of open-access networks, we have been the U.S. pioneers in

open access for more than a decade. Some of our municipally owned open-access networks have now been successfully operating for more than 12 years, with multiple providers offering local residents and businesses true choice in providers, services and packages. ❖

TOP TECHNOLOGIES AND SERVICES FROM LEADING BROADBAND INDUSTRY PLAYERS

COMPANY	CUSTOMERS					PRODUCTS AND SERVICES																	
	MDUS/PCOS	TELCOS	CABLE TV	HOSPITALITY	MUNICIPALITIES	ELECTRIC CO-OPS	ACTIVE ELECTRONICS – WIRELINE	ACTIVE ELECTRONICS – WIRELESS	VIDEO HEADENDS AND RELATED EQUIPMENT	PASSIVES – OUTSIDE PLANT	PASSIVES – INSIDE PLANT	CUSTOMER-PREMISES EQUIPMENT	STRUCTURED WIRING	PASSIVE OPTICAL LAN	TEST EQUIPMENT	INTERNET AND VIDEO SERVICES / PROGRAMMING	OTHER MANAGED SERVICES	PLANNING, DESIGN OR CONSTRUCTION	TRAINING	BACK-OFFICE SOFTWARE	CUSTOMER-FACING SOFTWARE	OPTICAL FIBER AND CABLE	
Calix		✓	✓		✓	✓						✓											
CenturyLink	✓															✓							
Charles Industries, LLC – an Amphenol Company		✓	✓		✓					✓		✓											
Clearfield, Inc.	✓	✓	✓		✓	✓	✓		✓	✓	✓												✓
Corning Optical Communications		✓			✓	✓			✓	✓				✓					✓	✓			✓
DISH Fiber	✓															✓							
ESPI		✓	✓		✓	✓	✓	✓			✓						✓						
Finley Engineering Company, Inc.		✓			✓	✓											✓	✓					
Hexatronic	✓	✓		✓	✓																		✓
IQGeo	✓	✓			✓	✓				✓	✓											✓	
KGPCo		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓					✓
MaxCell	✓	✓	✓	✓	✓	✓			✓				✓										
OFS	✓	✓	✓	✓	✓	✓																	✓
Positron Access Solutions	✓	✓	✓	✓	✓	✓	✓			✓	✓												
Spectrum Community Solutions	✓															✓							
WESCO/Anixter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓		✓
WideOpen Networks, Inc.					✓												✓	✓					