

solutions tailored primarily for middle-mile applications. Clients include municipalities, electric utilities, telephone companies, electric cooperatives and government agencies.



Baller Herbst Stokes & Lide PC

www.baller.com
202-833-5300

Key Products: Legal services, public policy advocacy

Summary: This telecom law firm has a long, consistent record of support for the development of fiber to the home through its representation of clients and through public policy advocacy. The firm represents public and private entities on a broad range of communications matters, both nationally and in more than 35 states. It is best known for representing the rights of public entities to build and operate their own communications networks. Baller Herbst served as a consultant to Google on its Fiber for Communities initiative and was involved in several Gig.U projects. As the founder and president of the US Broadband Coalition, a broad-based consortium, Baller Herbst president Jim Baller was a major contributor to the development of a national consensus on the need for a national broadband strategy. He is now a driving force behind the movement to use high-capacity broadband to foster economic development, and he was instrumental in the recent formation of CLIC, the Coalition for Local Internet Choice (www.localnetchoice.org), dedicated to protecting the rights of communities to determine their economic futures by choosing the best broadband Internet infrastructure for their businesses, institutions and residents. Founded in 1983, Baller Herbst is based in Washington, D.C., and Minneapolis and has six attorneys.

BHC Rhodes

www.ibhc.com
913-663-1900

Key Products: Planning, design and construction of FTTx projects

Summary: BHC Rhodes provides civil engineering services to telecom firms that build and maintain fiber networks across the United States. BHC Rhodes has designed and managed thousands of miles of telecom network infrastructure for clients that range from small communities and telcos to large international service providers. Its FTTx services include feasibility studies, cost estimating and budgeting; planning, layout and network architecture; GIS and AutoCAD mapping; hut site development and construction; outside-plant design; site surveys; right-of-way permitting and asset management. BHC Rhodes customers include AT&T, Verizon, Time Warner Cable, Level 3 Communications, Cox Communications, C

Spire, Unite Private Networks, and numerous municipalities. BHC Rhodes recently expanded its geographic base by opening an Austin, Texas, office. Based in Overland Park, Kan., BHC Rhodes is privately owned and has more than 100 employees.



Black & Veatch

www.bv.com
913-458-2000

Key Products: Consulting, engineering, construction, operations and program management services

Summary: Founded in 1915, Black & Veatch is a global engineering, consulting and construction company that specializes in telecommunications, energy, water and government services. An employee-owned company, Black & Veatch has approximately 10,000 professionals working in more than 110 offices worldwide and has completed projects in more than 100 countries. Services include engineering, procurement, construction, design, management consulting, asset management, environmental consulting and security. Black & Veatch has deployed more than 30,000 miles of fiber for commercial carriers, cities and utilities and was recently selected by the Commonwealth of Kentucky as part of a consortium that will build a statewide fiber backbone. Revenue in 2014 was \$3.0 billion.



Blandin Foundation

www.blandinfoundation.org
877-882-2257

Key Products: Grant making, community leadership development and public policy programs

Summary: Since 1941, the Blandin Foundation, a private foundation based in Grand Rapids, Minn., has been dedicated to strengthening rural Minnesota communities. Its Broadband Initiative, launched in 2003, helps communities educate citizens about the need for ultra-high-speed broadband and plan and execute broadband projects. The foundation has published informational guides, sponsored conferences and educational events, and supported many feasibility studies for the development of robust, high-speed broadband networks. It has supported implementation of broadband applications in schools, health care facilities and other institutions and for home-based users and has promoted broadband adoption in rural communities. In May 2015, Blandin Foundation awarded 29 grants totaling \$321,245 to



Leaders and innovators in the fiber-to-the-home arena for 2015

A BBC Staff Report

BROADBAND COMMUNITIES' annual FTTH Top 100 list celebrates organizations for their contributions to "Building a Fiber-Connected World." This has been a good year for building a fiber-connected world, and that's reflected in the composition of the 2015 list.

Among the trends the editorial staff took into account are the following:

- Cable companies are joining the fiber-to-the-home parade. Comcast and Cox, leveraging fiber they had deployed to business customers and others, announced large-scale residential FTTH buildouts (along with future

DOCSIS 3.1 builds). As of press time, these projects were in the early stages, but they are ambitious enough to qualify both companies as FTTH leaders. Pavlov Media, a private cable operator, makes good use of its robust fiber backbone, content delivery network and other advanced technologies to provide gigabit experiences for residents of student housing and other multifamily properties.

- Several technology companies, following Google's lead, are branching out to build fiber-to-the-home networks. One such entity with national ambitions is the domain-services company Tucows, whose Ting subsidiary entered the FTTH market with a splash.
- Delivering superior services requires more than just fiber in the access network. Robust, reasonably priced backhaul is becoming increasingly necessary. Allied Fiber, which just completed the first leg of its planned nationwide long- and short-haul dark fiber network, and OneCommunity, a nonprofit that operates a regional fiber network in Northeast Ohio, are among the organizations using innovative methods to enable more economical Internet access.

As in previous years, the FTTH Top 100 list represents many niches in the complex fiber-to-the-home ecosystem. Optical fiber and fiber cables; passive equipment for connecting, protecting and managing fiber; and active equipment for sending and receiving signals over fiber are the most basic components of an

ORGANIZATIONS ADDED OR REINSTATED TO THE FTTH TOP 100 LIST IN 2015

3-GIS	www.3-gis.com
Allied Fiber	www.alliedfiber.com
Comcast Cable	www.comcast.com
Cox Communications	www.cox.com
Fiberdyne Labs	www.fiberdyne.com
Fujitsu Network Communications	http://us.fujitsu.com/telecom
OneCommunity	www.onecommunity.org
Pavlov Media	www.pavlovmedia.com
Pulse Broadband	www.pulsebroadband.net
Tucows/Ting	www.ting.com/internet

TOP 100 AT A GLANCE

Network Planning, Design, Engineering, Construction, Installation	36
Fiber and Fiber Cable	40
Network Testing, Monitoring and Management Services	43
Customer-Premises Equipment	
Other Than Network Interface Devices	44
Network Management Solutions	48
Fiber-to-the-Home Electronics	52
Test and Measurement Equipment	56
Passive Components for FTTH Networks	60
Optical LAN Solutions	62
Carrier Ethernet Solutions	64
Distributors of Fiber Optic Products	66
Network Planning and Design Solutions	69

FTTH network, along with software for planning, setting up and managing networks and for provisioning and billing fiber services. The list contains many companies that design, manufacture and distribute these essential products.

To put all these pieces together requires firms that finance, plan, design, engineer, construct and install fiber optic networks as well as equipment for digging, pushing, pulling and attaching fiber. These, too, are represented on the list. The list also includes a variety of organizations that advocate for better broadband or create the conditions that make FTTH more profitable.

Finally, there wouldn't be any fiber to the home if not for the network owners – large and small, private and public, incumbent and competitive – that invest in networks, decide what and where to build, operate networks and deliver services.

SELECTION CRITERIA

In selecting the FTTH Top 100, the editors looked for organizations that advance the cause of fiber-based broadband by

- Deploying networks that are large or ambitious, have innovative business plans or are intended to transform local economies or improve communities' quality of life
- Supplying key hardware, software or services to deployers
- Introducing innovative technologies with game-changing potential, even if they have not yet been commercially deployed
- Providing key conditions for fiber builds, such as early-stage support or demand aggregation.

To be listed among the FTTH Top 100, an organization may be based anywhere in the world but must do business in North America. Except for broadband service providers, which are inherently local, we give preference to organizations that serve national rather than local markets. Overall size is unimportant, as is corporate form – in addition to for-profit

companies, the list includes municipal providers, a telephone cooperative and several nonprofits, some of which include both public and private partners.

Although some organizations on the list focus entirely on fiber to the premises or other fiber-based broadband technologies, most deliver or support a mix of broadband technologies. For some, broadband represents only a small part of their business. In making these selections, the editors considered how important the organizations are to advancing fiber broadband rather than how important broadband is to them.

The FTTH Top 100 list was researched by Marianne Cotter, Rachel Ellner and Cassandra Kania and overseen by editor Masha Zager, with recommendations and advice from editor-at-large Steve Ross.

To nominate an organization for next year's FTTH Top 100, email masha@bbcmag.com.

Fiber-To-The-Home TOP 100
Broadband Communities Magazine 2013

GLDS
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BEST-OF-SUITE BILLING, CUSTOMER MANAGEMENT, & PROVISIONING.
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760.602.1900
800.882.7950

Motorola smartphone screen showing app interface with items like "View Route Map", "Equipment by Truck", "Status: Logged In", and "Work Order Lookup".

FIBER-TO-THE-HOME TOP 100 LIST

COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
3-GIS	www.3-GIS.com	256-560-0744	Fiber network design and mapping software
3M Company / Communication Markets Division	www.3M.com/telecom	800-426-8688	Interconnection, connection protection, fiber management and facilities protection products for broadband networks
Actiontec Electronics	www.actiontec.com	408-752-7700	Broadband customer-premises equipment
ADTRAN	www.adtran.com	256-963-8000	Solutions for FTTH, Carrier Ethernet, packet optical transport, mobile backhaul, service migration and service management
Advanced Media Technologies	www.amt.com	954-427-5711; 888-293-5856	Distributor of fiber optic transmission equipment, headends, IP and QAM set-top boxes, cable modems
AFL	www.AFLglobal.com	864-433-0333; 800-235-3423	Fiber optic cable, fiber and copper interconnect products, optical connectivity, outside-plant hardware, fusion splicers, test equipment, training, systems integration
Alcatel-Lucent	www.alcatel-lucent.com	908-582-3000	Broadband access equipment, IP routing platforms, optical switching and transport solutions, next-generation network and IMS solutions, network management, service integration, right-of-way solutions
Allied Fiber	www.alliedfiber.com	212-920-8300	Long-haul and short-haul dark fiber, network-neutral co-location space
Allied Telesis	www.alliedtelesis.com	800-424-4284	GPON, EPON and wireless network solutions and services for service providers, enterprises and home networks
Alpha Technologies	www.alpha.com	800-322-5742; 360-647-2360	Power systems for broadband communications
Anritsu Company	www.anritsu.com	800-ANRITSU (267-4878)	Network test and measurement instruments; microwave, optical and RF components; service assurance solutions
ARRIS	www.arris.com	678-473-2000; 866-362-7747	Optical and RF equipment, including RFoG, for HFC and fiber networks; modems and gateways; software for remote workforce management and network management
AT&T / AT&T Connected Communities	www.att.com/ communities		Broadband Internet, TV and voice services
Atlantic Engineering Group	www.aeg.cc , www. atlanticfibernetworks.com	706-654-2298	Design and field engineering, aerial and underground construction and professional services for FTTH and smart-grid networks
Baller Herbst Stokes & Lide PC	www.baller.com	202-833-5300	Legal services, public policy advocacy
BHC Rhodes	www.ibhc.com	913-663-1900	Planning, design and construction of FTTx projects
Black & Veatch	www.bv.com	913-458-2000	Consulting, engineering, construction, operations and program management services
Blandin Foundation	www.blandin foundation.org	877-882-2257	Grant making, community leadership development and public policy programs
C Spire / C Spire Fiber	www.cspire.com/ fiberhome	855-277-4734	Voice, video and Internet access delivered over a fiber-to-the-home network

COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
Calix	www.calix.com	707-766-3000; 877-766-3500	Fiber access solutions for residential and business services, network and services management software, value-added software as a service
CCG	www.ccgcomm.com	202-255-7689	Regulatory, engineering, marketing, strategy and planning services
CenturyLink	www.centurylink.com	318-388-9000	Data, voice, video, managed services, cloud and hosted IT solutions
Charles Industries	www.charlesindustries.com	847-806-6300	Fiber optic distribution enclosures and cabinets, fiber aggregation and demarcation interconnects and hubs, fiber cross-connects
Cincinnati Bell	www.cincinnati-bell.com , www.cincinnati-bell.com/Fioptics	513-397-9900	Telephone, data, video, wireless and information technology solutions
Cisco Systems	www.cisco.com	800-553-6387	FTTH hardware, set-top boxes, cable modems, headends, network management systems
Clearfield	www.seeclearfield.com	763-476-6866; 800-422-2537	Fiber distribution systems for inside plant, outside plant and access networks
Comcast Cable	www.comcast.com		High-speed Internet, video and voice services over cable and FTTH networks
CommScope	www.commscope.com	828-324-2200; 800-982-1708	FTTH electronics, cable and connectivity products
Corning / Corning Optical Communications	www.corning.com/opcomm	828-901-5000	Optical fiber, optical fiber cable, fiber cabinets and splitters, fiber connectors, terminals, MDU products
COS Systems	www.cossystems.com	800-562-1730	Demand aggregation software, BSS/OSS for managing open-access fiber networks
Cox Communications	www.cox.com		High-speed Internet, video, voice and home security services
CTC Technology & Energy	www.ctcnet.us	301-933-1488	Fiber and wireless broadband network design, engineering, assessment and implementation
Dasan Networks USA	www.dasanetworksus.com	770-674-0302	Access network equipment, Carrier Ethernet
Design Nine	www.designnine.com	540-951-4400	Broadband planning, design and project management; network operations
Ditch Witch	www.ditchwitch.com	800-654-6481	Construction equipment for laying fiber
Dura-Line	www.duraline.com	800-847-7661	Conduit, cable-in-conduit, microducts and accessories
Dycom Industries	www.dycomind.com	561-627-7171	Engineering, construction, maintenance and installation services for telecommunications providers
EPB Fiber Optics	www.epbfi.com	423-648-1372	Voice, video, data and smart-grid services provided over a fiber optic network
ETI Software Solutions	www.etisoftware.com	770-242-3620; 800-332-1078	Software products that manage broadband service fulfillment, activation and revenue assurance

FIBER-TO-THE-HOME TOP 100 LIST

COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
EXFO	www.exfo.com	418-683-0211; 800-663-3936	Telecom test and service assurance solutions
Fiberdyne Labs	www.fiberdyne.com	315-895-8470	Fiber optic splitters, pedestals, cabinets, fiber cable and fiber cable assemblies, test equipment; fiber installation, splicing and testing services
Finley Engineering	www.fecinc.com	417-682-5531	Network design and engineering services
Fujitsu Network Communications	http://us.fujitsu.com/telecom	888-362-7763	Multivendor core, access and wireless network equipment; network management software solutions; end-to-end multivendor network project integration; other professional services
G4S Secure Integration	www.g4s.us	402-233-7700; 855-447-8721	Design, construction and maintenance of stand-alone and integrated communications networks and security systems
Genexis	www.genexis.eu	443-602-4510; +31 40 747 0233	Customer-premises equipment for FTTH service providers, service-provisioning software
GLDS	www.glds.com	800-882-7950	Subscriber management, billing, provisioning and workforce management software
Google / Google Fiber	www.google.com	650-253-0000	Video and gigabit Internet services delivered over FTTH networks
Graybar	www.graybar.com	800-GRAYBAR (472-9227)	PON electronics, optical transport, fiber cabinets/enclosures, single-mode fiber optic cable, fiber splice closures and pedestals, DC power, outdoor fiber terminals, FTTx drop cable, hardened MSTs
GVTC Communications	www.gvtc.com	800-367-4882	Video, high-speed Internet, security monitoring, local and long-distance telephone and advanced data services, Wi-Fi, Ethernet backhaul
Henkels & McCoy	www.henkels.com	215-283-7600	Planning, design, engineering, project management, construction and installation of wireline and wireless communications networks
Hiawatha Broadband Communications	www.hbci.com	888-474-9995	Voice, video, data and wireless services over high-speed networks
Hotwire Communications	www.hotwirecommunications.com	800-409-4733	Data, voice and video services delivered over fiber-to-the-home networks
InfiniSys Electronic Architects	www.electronicarchitect.com	386-236-1500	Telecommunications network design for multifamily buildings, technology amenity engineering
Institute for Local Self-Reliance	www.ilsr.org ; www.MuniNetworks.org	612-276-3456	Broadband policy research and municipal broadband advocacy
Inteleconnect	www.inteleconnect.com	734-944-6694	Telecommunications strategies for municipalities, campuses, developments and businesses
iPhotonix	www.iphotonix.com	214-575-9300	Optical network terminals, residential gateways

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COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
JDSU	www.jdsu.com	408-546-5000	Fiber optic communications components, network optimization and test equipment
KGP Logistics	www.kgplogistics.com	800-755-1950	Products for FTTH, including outside plant, central office, DAS, transmission and customer premises; supply-chain and distribution services
Leviton Manufacturing	www.leviton.com	718-229-4040	Premises wiring, outside plant, central-office solutions and home automation products
LUS Fiber	www.lusfiber.com	337-993-4237	Voice, video and data services delivered over an FTTH network
m2fx	www.m2fx.com	847-325-5454	Armored polymer microduct and fiber cables for FTTH and MDU markets
Macquarie Group / Macquarie Capital	www.macquarie.com	604-605-1779	Project development and equity investment, financial advisory, debt arranging, lending and funds management services
Magellan Advisors	www.magellan-advisors.com	888-488-1767	Broadband and telecom planning, deployment and management services
Mapcom Systems	www.mapcom.com	804-743-1860	Visual operations system software, database administration, workforce management tools, training and consulting
MasTec	www.mastec.com	218-785-3030	FTTx deployment, outside-plant cabling, inside-plant construction and installation, joint trench systems, splicing and testing, systems integration, ongoing maintenance
MaxCell	www.maxcell-innerduct.com/	888-387-3828	Fabric innerduct, conduit technology
Michels Corporation	www.michels.us	920-583-3132	Fiber optic network construction, including outside-plant construction, structured cabling and fiber splicing and testing
Mid-State Consultants	www.mscon.com	435-623-8601	Communications engineering services
Millennium Communications Group	www.millenniuminc.com , www.matrixdgd.com	800-677-1919	Planning, design, permitting, project management, IT services and solutions, physical security and related services for fiber optic networks
Multicom	www.multicominc.com	800-423-2594	Distributor of fiber optic products for end-to-end communications solutions; VoIP services
Multilink	www.gomultilink.com	440-366-6966	Fiber distribution and cable management solutions; network power supplies, enclosures and cabinets; MDU enclosures; raceways and pathways
NEO Fiber	www.NEOfiber.net	970-309-3500	Consulting, feasibility analysis, business planning, RFP writing and vendor management, project management, design and engineering
OFS	www.ofsoptics.com	770-798-5555; 888-342-3743	Optical fiber, optical cable, fiber management and connectivity products for homes, businesses and MDUs; splicers; network design services

FIBER-TO-THE-HOME TOP 100 LIST

COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
On Trac	www.ontracinc.net	423-317-0009	FTTx consulting, design, installation and splicing services
OneCommunity	www.onecommunity.org	216-923-2200	Fiber optic connectivity for anchor institutions and enterprises
Pace / Aurora Networks	www.pace.com/americas , www.aurora.com	561-995-6000	FTTH and cable network equipment, home media servers, set-top boxes, and customer-premises equipment for fiber, Ethernet, xDSL and cable networks
Pacific Broadband Networks	www.pbnglobal.com/	703-579-6777	FTTH electronics, software for network management and provisioning
Pavlov Media	www.pavlovmedia.com	800-677-6812	Internet, video and voice services; secure home networking for apartment units
Power & Tel	www.ptsupply.com	800-238-7514	Fiber optic products and cable, optical networking electronics, test gear, IPTV, home networking solutions
Preformed Line Products	www.preformed.com	440-461-5200	Cable anchoring and control hardware and systems, fiber optic and copper splice closures, high-speed cross-connect devices
Prysmian Group	www.prysmian.com	803-951-4800; 800-713-5312	Optical fiber and telecommunications cables
Pulse Broadband	www.pulsebroadband.net	314-324-7347	Fiber network and FTTH planning, design, construction management, provisioning, billing, customer care, video programming services and operations management
SDT	www.sdt-1.com	601-823-9440	Telecommunications infrastructure services, including structured cabling; engineer, furnish and install services; design and engineering
SENKO Advanced Components	www.senko.com	508-481-9999	Fiber distribution and connectivity equipment, fiber optic components
Smithville Communications / Smithville Telecom / Smithville Fiber	www.smithville.net	812-876-2211; 800-742-4084	Residential broadband services and fiber connectivity for businesses and government agencies
Sonic	www.sonic.net	888-766-4233	Gigabit fiber and DSL Internet access, residential and business voice service, co-location, business networking
Superior Essex	www.SuperiorEssex.com	770-657-6000	Premises and outside-plant fiber and copper cable products, FTTH closures
Suttle	www.suttlesolutions.com	800-852-8662	Fiber enclosure systems, home networking solutions; structured wiring media panel enclosures and modules, high-speed panels and frames
TE Connectivity	www.te.com	610-893-9800	Fiber optic cabling and connectivity products
Team Fishel	www.teamfishel.com	614-274-8100; 800-347-4351	Network design, engineering, construction, installation and maintenance services
Telect	www.telect.com	509-926-6000; 800-551-4567	Fiber optic and copper connectivity solutions, network power management, equipment racks and cabinets, cable management systems

COMPANY	WEBSITE	PHONE	KEY PRODUCTS AND SERVICES
Tellabs	www.tellabs.com	630-798-8800	Optical LAN, GPON optical line terminals and optical network terminals, outside plant and network management
Tucows / Ting	www.ting.com/internet	855-846-4389	Gigabit Internet access
US Ignite	www.us-ignite.org	202-365-9219	Coordinating development and testing of next-generation broadband services
Vantage Point Solutions	www.vantagepnt.com	605-995-1777	Telecom engineering and consulting services
Verizon Communications / Verizon Enhanced Communities	www.verizon.com ; www.verizon.com/communities		Internet, TV and digital voice services
Vermeer Corporation	www.vermeer.com	641-628-3141; 888-837-6337	Horizontal directional drilling equipment, utility and pedestrian trenchers and plows
Walker and Associates	www.walkerfirst.com	800-925-5371	Products and services for deploying communications networks
Zhone Technologies	www.zhone.com	510-777-7000; 877-946-6320	Equipment for all-IP multiservice broadband access, including integration of FTTx, Ethernet in the First Mile and wireless access technologies
ZyXEL Communications	www.us.zyxel.com	714-632-0882; 800-255-4101	Customer-premises equipment and Ethernet switches for FTTH and FTTN networks

“Fiber networks not only provide the greatest broadband capability but are typically the least expensive to deploy as well. Without the best broadband network, a landline provider will quickly become irrelevant.”

– Larry Thompson, CEO, Vantage Point Solutions

3-GIS

256-560-0744
www.3-gis.com

Key Products: Web-based fiber network design and mapping software

Summary: 3-GIS is the developer of popular Web-based software for planning, designing and managing fiber networks. The software suite, which uses ESRI's ArcGIS platform, includes browser-based, mobile and admin applications and can be configured to cover a range of needs and use cases. It can be deployed either on premises or in a cloud-based SAAS model. The mobile application can be used by technicians to collect, correct and view asset information in the field with a variety of devices. 3-GIS clients include Level 3 Communications, Atlantic Engineering Group, NewCom, Allo Communications, Southern Light and BHC Rhodes. The company has about 50 employees. It was founded in 2006 and is headquartered in Decatur, Ala.

3M Company / Communication Markets Division

www.3M.com/telecom
800-426-8688

Key Products: Interconnection, connection protection, fiber management, facilities protection products for broadband networks

Summary: 3M offers a full-fiber MDU broadband solution for both inside and outside living units. For quick, easy deployment of fiber broadband in existing residences, the 3M Fiber Pathway for inside the living unit can be combined with the 3M One Pass Fiber Pathway hallway solution via simple, field-installable 3M fiber connectors. For more than 50 years, products from 3M have formed the backbone of the telecommunications industry, and network operators worldwide rely on 3M to connect and protect their infrastructures. From FTTx to xDSL to wireless, 3M's network of networks connects smart grids to smartphones,