

About Us



USTC Corp Acquires Multicom

Read the [Press Release](#)



1982 was a significant year for Sherman Miller, Multicom’s founder and president. It was that year that he started Multicom, Inc. – an event marked by the opening of the garage door of his home.

Since that time, Multicom has grown to be a cohesive team of experienced technicians, engineers, administrators, and sales people with decades of experience under their belt – many of our staff today are original hires and have worked at Multicom for more than a decade!

Multicom offers from one source, multiple lines of products to completely build and maintain communication systems at cost effective prices.

Multicom stocks over 18,000 products from more than 380 of the world’s major manufacturers.

Affiliations

prevnext



The President’s “E” Award

For Outstanding Contributions to the Export Expansion Program of the U.S.A



U.S. Department of Commerce District Export Council

Sustaining Member



Chamber Trust - Seal

World Chamber Trust B2B Seal

Official Chamber Trust Sealed



Orlando Chamber of Commerce

Board Member



IMSA: International Municipal Signal Association

Sustaining Member



NSCA: National Systems Contracting Association

Sustaining Member



SCTE: Society of Cable Telecommunication Engineers

Sustaining Member

President's "E" Award



The President's "E" Award was created by Executive Order of the President on December 5, 1961, to afford suitable recognition to persons, firms, or organizations which contribute significantly in the effort to increase United States exports.

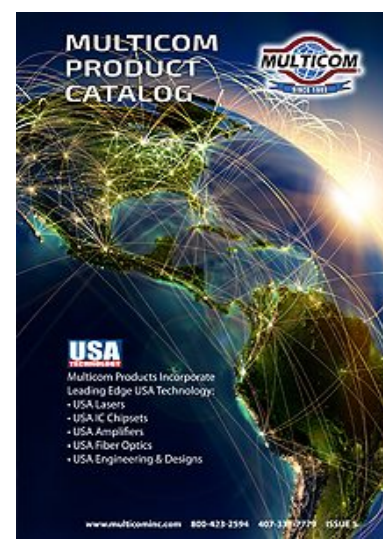
The President's "E Star" Award, which was authorized by the Secretary of Commerce on August 4, 1969, affords continuing recognition of noteworthy export promotion efforts.

Background

During World War II, more than 4,000 "E Pennants" were presented to war plants in recognition of production excellence. The famous flag with the big "E" emblazoned on it became a badge of patriotism in action.

President Kennedy revived the World War II "E" symbol of excellence to honor and provide recognition to America's exporters. Thus, the "E" Award Program was established by Executive Order 10978 on December 5, 1961. The "E Star" was authorized in 1969 to recognize "E" Award winners for continued efforts in export expansion.

Winners of the "E" and "E Star" Award are authorized to fly the blue and white banner, to display the accompanying certificate of commendation which is signed by the Secretary of Commerce in the name and by the authority of the President, to wear and issue to employees an "E" lapel pin, and to refer to the award in their advertising.



Multicom's New Products are Leading the Way

'Cost-Effective Quality' is the buzz-word these days and this is what Multicom's new line of fiber optic products deliver.

For a comprehensive look at all of our fiber optic, CATV and network offerings:

[See our New 2020 Product Catalog](#)

Multicom Cares –

Multicom employees participating in various charitable activities both at work and on their own time. See more Multicom employees in action [here...](#)



[Volunteers Work for Typhoon Haiyan Relief](#)

Multicom Cares



[Clean The World in Orlando, FL](#)

Multicom Cares



[5K Walk/Run for the Rescue Outreach Mission Homeless Shelter](#)

Multicom Cares



[Go – STOP! Multicom Contributes Traffic Signal Light to Local Elementary School](#)

Multicom Cares



[Mconnect Enjoys Another Perfect Season](#)

Multicom Cares



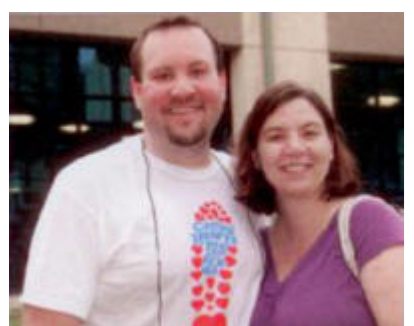
[Mconnect Brings Home City West Palm Beach Championship with Undefeated Season](#)

Multicom Cares



[Mconnect Goes Undefeated in West Palm Beach Flag Football League](#)

Multicom Cares



[5K Run/Walk and Health Expo](#)

Multicom Cares



[Team Multicom Runs Corporate 5K to Benefit Youth Athletics and Sports Programs](#)

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[US Post Office: Food For The Homeless Drive](#)

Multicom Cares



[Habitat for Humanity](#)

Multicom Cares



[Bags of Hope](#)

Multicom Cares



U.S. ARMY

[Care Packages for Our Troops](#)

Multicom Cares



[Supplying Food During the Recent Famine in Kenya, and Now Building a New Primary School for the Kids](#)

Multicom Cares



[Kids Against Hunger – Haiti Relief](#)

Multicom Cares



[Red Cross & AMVETS](#)

Multicom Cares



[Lake Mary Easter Fest 2010](#)

Multicom Cares



Meet Penny, our friendly neighborhood office peahen – or female peacock. Though not a full time employee, she’s been hanging around our office for quite some time now.

We have requested her resume in the hopes of finding her a position at Multicom, but she seems to be content merely eating the food that we provide and greeting visitors and staff as we come and go.

Stop by anytime to meet Penny, and the rest of our Multicom staff.

Privacy Policy

Multicom, Inc. is committed to respecting our customers’ privacy. Once you choose to provide personally identifiable information, it will only be used in the context of your customer relationship with Multicom, Inc. Multicom, Inc. collects and uses personally identifiable information for billing, shipping, resolution of problems associated with service or products, and to inform you of new products or services that will enhance Multicom, Inc’s ability to provide services and products to you. Multicom, Inc. may also use personally identifiable information to market products and services to you, but will not sell, rent, trade, lease, or disclose or make available any personally identifiable information to any third parties seeking to market products without your prior consent. This includes information derived from orders, registration, and use of Multicom, Inc.’s services and products.

Unless required by law or your prior permission is obtained, Multicom, Inc. will only share the personal data you provide with other Multicom, Inc. entities and/or business partners who are acting on Multicom, Inc.’s behalf to provide you services and products. Such Multicom, Inc. entities and/or national or international business partners are governed by Multicom, Inc.’s privacy policies with respect to the use of this data.

Multicom, Inc. reserves the right to use personally identifiable information to investigate and help prevent potentially unlawful activity that threatens either Multicom, Inc. or any company affiliated with Multicom, Inc. Moreover, upon the appropriate request of a government agency, law enforcement agency, court or as otherwise required by law, Multicom, Inc. may disclose personally identifiable information.

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Terms and RMA's

RMA Request Form

Your Name (required)

Company (required)

Your Email (required)

Telephone (required)

Part Number (required)

Serial Number (if applicable)

Invoice Number (required)

RMA Type Return Repair

Reason for Return (required)

Documents

[New Remittance Information 2020-Contact Us](#)

[Credit Application](#)

[Customer Setup Form](#)

[Return Material Authorization Policy](#)

Active Ethernet Components - Features and Advantages

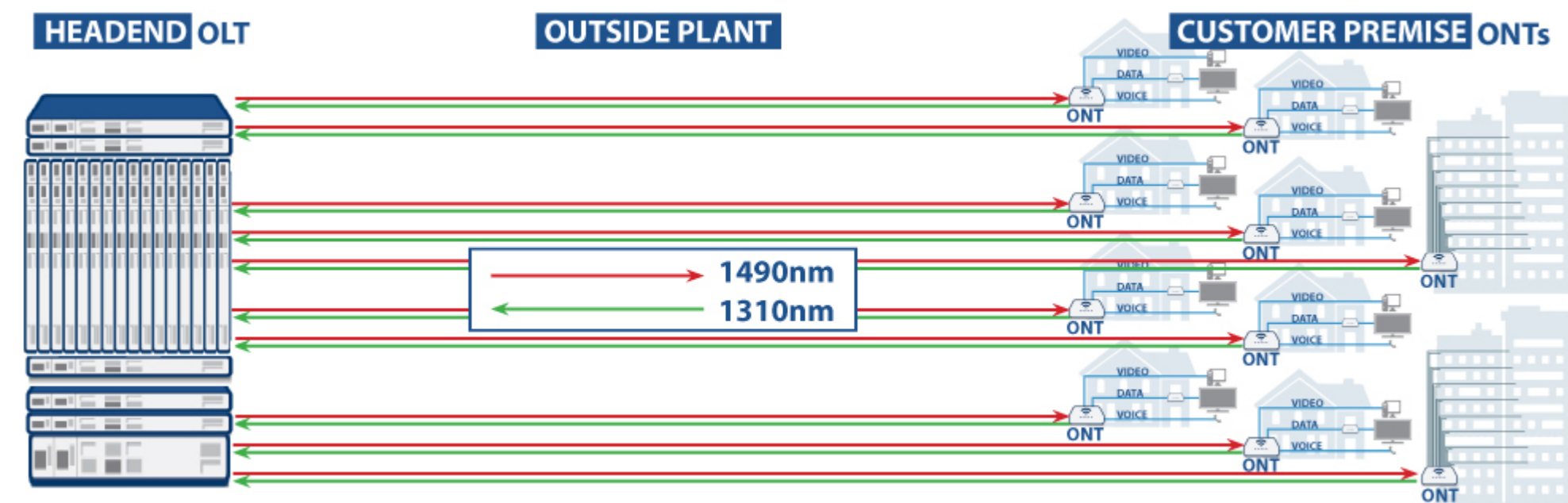
Let's Take a Closer Look at Active Ethernet Networks

First off, what is Active Ethernet?

Active Ethernet (known as AE), is very straight-forward and an easy concept to grasp. Simply put, it is a point-to-point fiber access technology for delivering Internet services to residential and business subscribers. Point-to-point offers a dedicated fiber connection – unique to the residential or business subscriber, with no shared bandwidth – with Fiber to the Home (FTTH) or Fiber to the Business (FTTB) services.

What is Active Ethernet Technology? How does AE work?

An Active Ethernet network has a direct point to point connection from the Optical Line Terminal (OLT), to the subscriber Optical Network Terminal (ONT) – also known as Optical Network Unit (ONU). OLTs can be located in remote terminal Fiber-to-the-Node cabinets or central office locations. Active Ethernet uses separate fiber optic wavelengths to transmit and receive traffic – 1490nm from the OLT to the subscriber's ONT, and 1310nm from the subscriber's ONT back to the OLT. Each optical connection provides a dedicated link, all the way from the network to the subscriber.



An Active Ethernet Network is a dedicated point to point technology using Singlemode Fiber from the Core Headend OLT all the way to the home or business where the fiber is terminated on the indoor or outdoor ONT

What are the benefits of offering Active Ethernet to home and business?

- Not a shared resource
- One and Done Future Proofed Network
- Unlimited Bandwidth Package provisioning
- Active Ethernet is easier to implement and support
- Dedicated 1 Gbps or 10Gbps Internet symmetrical connections to home or business user

What services can be delivered on an Active Ethernet network?

All expected networking services are supported on an Active Ethernet point to point network. With the appropriate ONT, Active Ethernet networks can deploy any residential IP service – Internet access, multicast video, and VoIP. As well, IP and Ethernet Virtual Private Networks (VPN) services and T1/E1 services can be provided for businesses.

What Active Ethernet equipment goes in the home or business?

Small Optical Network Terminals (ONTs), that look like a familiar modem – and can have WiFi capabilities as well – are installed at the subscriber premises. ONTs terminate the fiber from the Optical Distribution Network (ODN), synchronize with the remote Optical Line Terminal (OLT), and transmit and receive all subscriber traffic.

Residential ONTs can be simple demarcation devices – either inside or outside the home – that terminate the fiber and present Ethernet and/or voice ports into the home, or include a home gateway router with multiple Ethernet LAN and voice (POTS) ports which often include WiFi functionality.

Let's breakdown the components of a typical Active Ethernet Network:

Optical Line Terminal (OLT):



Dasan Zhone Solutions OLT: MX-180-GE-LT

The OLT is the ultimate network manager and controls all of the Active Ethernet network traffic, in the form video, data and voice signals, and sends them downstream to the ONTs on the other end. The OLT also receives these signals from the end user's ONT, and sends them on their way to their destination over the Internet.

To ensure that the downstream and upstream signals do not interfere with each other, they are sent on different light wavelengths. Downstream traffic is sent at 1550nm (video), and 1490nm (data and voice), and upstream traffic is sent back at 1310nm. See the image above.

[Learn more about the MX-180-GE-LT](#)

Optical Network Terminal (ONT):



Dasan Zhone Solutions ONT: ZNID-GE-2728A1-NA

The ONT connects to the opposite end of the OLT – at the end user's residence. It acts as the interface with the end user's equipment – computers, televisions, WiFi, VoIP phones, etc. Data received from the end user is then aggregated, optimized and sent by the ONT to the upstream OLT. ONT's also have the ability to broadcast WiFi throughout the end user's home – see how below.

[Learn more about DZS's zNID-GE-2728A1-NA](#)



Dasan Zhone Solutions ONT: ZNID-10GS-5225A

[Learn more about DZS's zNID-10GS-5225A](#)

Another Feature of the ONT: WiFi

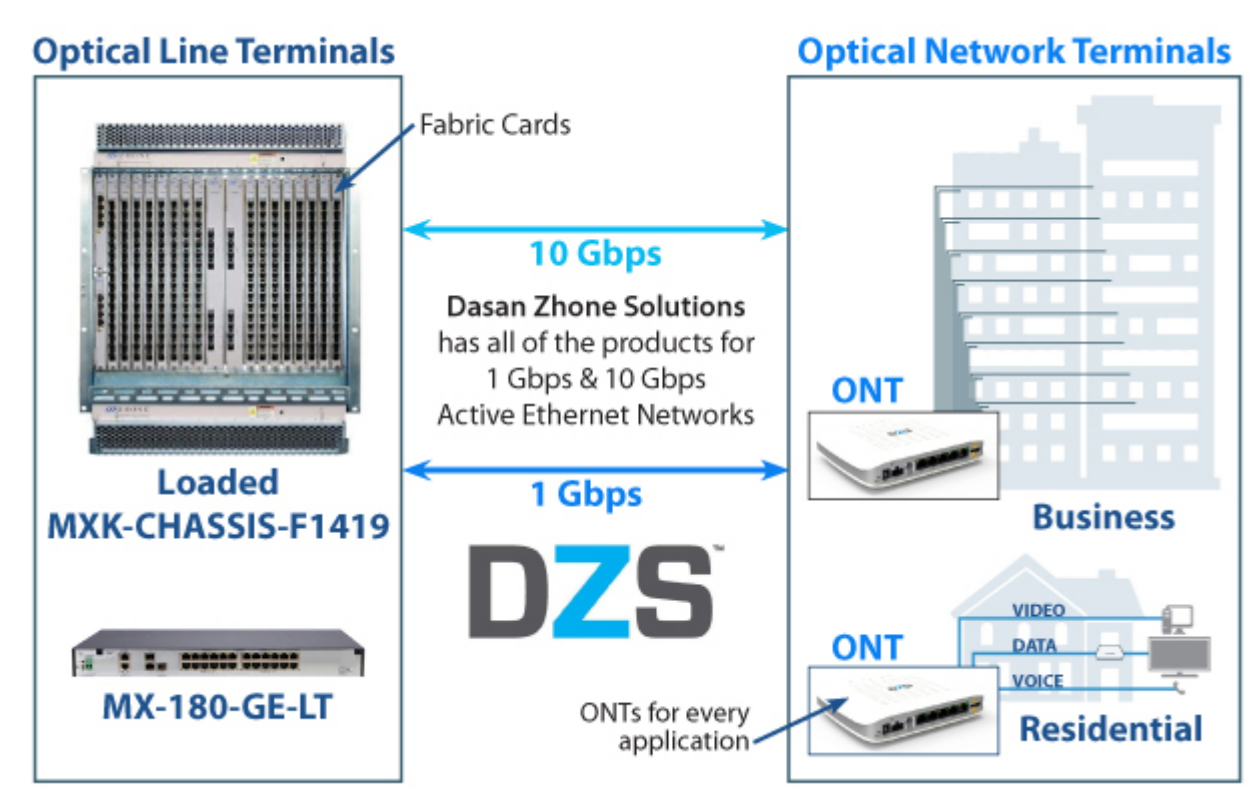


Dasan Zone Solutions
- MESH-2100

Not only does the ONT have the ability to deliver video, data and voice traffic for the end user devices, most can also broadcast WiFi signals throughout the house. Connecting a DZS MESH-2100 to the ONT provides the ability to connect WiFi enabled devices to the ONT to both receive and send over the Active Ethernet network the same as wired devices.

[Learn more about DZS's Whole Home WiFi](#)

Sample Active Ethernet Applications:



1 Gbps & 10 Gbps Active Ethernet Networks – All of the Products for End-to-End Connectivity

Active Ethernet Application 1: 1 GigaBit Internet Services serving 24 homes or businesses using singlemode fiber Point to Point – FROM: 1RU OLT, TO: Indoor Wireless ONT at home or business. Options for non-WiFi ONTs as well both indoor or outdoor ONTs. Based on the configuration below:

- Qty 1: [MX-180-GE-LT](#) – 1RU, 24Port Active Ethernet OLT, DC Power with option for AC Power
- Qty 24: [ZNID-GE-2728A1-NA](#) – Optional Non-Wireless indoor or outdoor ONTs
- Qty 1: [ZMS-VA-5000](#)
- Qty 24: [SFP-GE-1490TX-1310RX-20KM-SLC](#)
- Qty 1: SVC-ED-SLMS
- Qty 1: SVC-REMOTE-MISC

Active Ethernet Application 2: 10 GigaBit Internet Services serving 32 homes or businesses using singlemode fiber Point to Point – FROM: 14 Slot MXK-F1419 OLT Chassis, TO: Indoor ONT at home or business. Options for non-WiFi ONTs as well both indoor or outdoor ONTs. Based on the configuration below:

- Qty 1: [MXK-CHASSIS-F1419](#): 14 Slot OLT chassis, plus 2 addition slots for uplinks and 2 additional slots for Management Cards
- Qty 1: [MXK-FC-AETG8](#): 10Gig Uplink Card goes in MXK-F1419 Chassis, Qty 2 per chassis for redundancy
- Qty 2: [MXK-MC-TOP](#) – Management Card goes in MXK F1419 Chassis, Qty 2 per chassis for redundancy
- Qty 2: [MXK-LC-AETG16](#) – 16 Port 10 Gigabit Active Ethernet Line card, 14 per chassis

- Qty 32: [ZNID-GE-5225A](#) – Provides four 10/100/1000 Base-T, one 100/1000/2.5G/5G/10GBase-T LAN ports, as well as two FXS voice ports
- Qty 1: [ZMS-NMS-TR1](#)
- Qty 1: [MXK-10GE-SFP+SR](#)
- Qty 32: [XCVR-AE-SP+-SBD-1270-20KM-1A](#)
- Qty 32: [XCVR-AE-SFP+-SBD-1330-20KM-1A](#)
- Qty 12: MXK-LC-BLANK – These go in the empty line card slots in the MXK-F1419 chassis
- Qty 1: SVC-INSTALL-ZMS
- Qty 2: SVC-ED-SLMS

DZS Solutions - Fabric Cards or MXK-F GPON and Active Ethernet

Exceptional capability on the access service side of the MXK-F architecture requires matching capability on the network-facing uplinks. MXK-F™ Fabric Cards provide efficient, reliable, and highly-available data path aggregation solution for flows destined for the Cloud.

MXK-F™ Fabric Cards cards provide full card and network redundancy by supporting an active card and backup standby in the same chassis. If a card or network failover occurs, the standby card will take over instantly. And for additional network resiliency, these cards support both cross-card and intra-link aggregation, as well as the EAPS ring protocol.

[MXK-F™ Chassis](#) – MXK-F1421 is designed to be fully-compliant to meet the ETSI EN 300 standard for indoor cabinets and contains 16-access multi-service subscriber slots, and 2-network facing slots. MXK-F1421 can be mounted directly into a 21” wide rack, and into a 23” rack with adapter brackets. The chassis is equipped with a cable management tray, easy fan access, and rear-powered redundant power feeds.

MXK-F™ Fabric Cards – As the aggregation point for all MXK-F14xx platforms, MXK-F™ Fabric Cards provide a wide variety of network facing uplink options. These cards provide the network interface for cloud-bound link aggregation, link redundancy, and EAPS ring solutions.

MXK-F™ Management Cards – At the heart of this highly-capable platform is the MXK-F™ Management Card. With countless years of proven field experience, the management architecture of the MXK-F™ represents Zhone’s latest state-of-the-art design, further raising the bar set high by other Zhone MXK-family solutions.

MXK-F™ Access Service Cards – The MXK-F™ platform supports a 16-port GPON OLT access service card providing standards-based support of 2.5Gbps downstream and 1.25 Gbps upstream bandwidth.



DZS products supports all the Active Ethernet FTTx network deployment architectures perfectly and therefore gives you maximum freedom of choice in building your network. DZS is a pioneer in the Fiber to the Home/Business industry offering an extensive collection of optical line termination platforms and and multi-service access solution offerings.

[Request a Quote](#)

DZS's MXK-F Series of Active Ethernet & GPON OLTs

DZS' OLTs, offer un-paralleled investment protection for Service Providers: ILEC, CLEC, ISPs, Electric Cooperatives, Municipalities, WISPs, and MDUs (Apt, Condo) who offers GPON, XGS-PON, and high capacity Active Ethernet Services simultaneously, providing Data, Video, and Voice Internet services to up to 32,000 residential and business customers.

[MXK-F Series of OLTs](#)

Exceptional capability on the access service side of the MXK-F™ architecture requires matching capability on the network-facing uplinks. MXK-F™ Fabric Cards provide efficient, reliable, and highly-available data path aggregation solution for flows destined for the Cloud.

[MXK-F Series of OLT Fabric Cards](#)

DZS's ZNID Series of Active Ethernet & GPON ONTs

DZS offers the largest ONT Portfolio for GPON or Active Ethernet Gigabit Broadband Internet offerings. When terminating that Single Mode Fiber at the home you need flexibility when selecting an ONT to support your Data, Video, Voice, and Power over Ethernet (PoE) Devices.

[ZNID Series of ONTs](#)

DZS also offers a Wireless Access Point/Repeater and an ACS software suite

[Whole Home WiFi / CONNECT](#)

Education Solutions

Multicom is a leader in the design, manufacture and distribution of reliable high-performance video, wireless, data and voice products for the ever-changing needs of the education market.



Areas Served

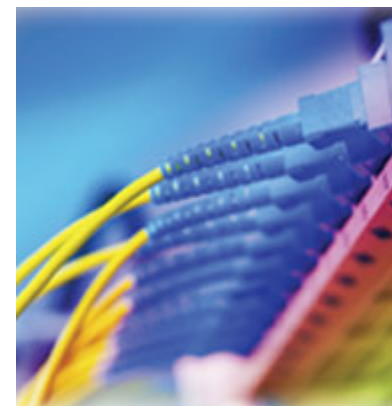


- Classrooms
- Student Housing
- Cafeterias
- Student Union
- Libraries
- Auditoriums
- Lecture Halls

Solutions Provided



- Video
- Wireless
- Data
- Voice



- Fiber Optic Distribution: [GPON](#), [HFC](#)
- [Ethernet Switches/Routers](#)
- [Clear QAM Video](#)
- [WiFi](#)
- [Coax Distribution](#)

Integrators and value-added retailers depend on Multicom's expertise to provide the [services, analysis, engineering and custom manufacturing](#) so they can support their customers in the installation, maintenance and growth of their businesses.

Field Installable Fiber Optic Fast Connectors

MULTICOM **QUICK & EASY FIBER TERMINATION IN LESS THAN 2 MINUTES**

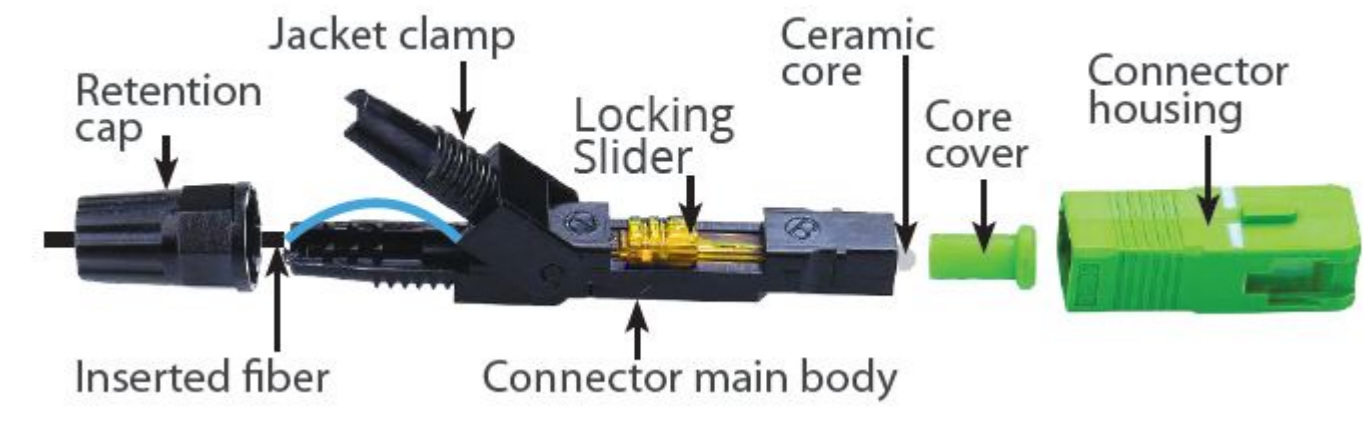
- No epoxy, fiber polishing, special tools or fusion splicer required
- Precision mechanical alignment & index-matching gel ensures low insertion loss
- Uses proven, molded V-groove technology



The Multicom Field-Installable Fiber Optic Fast Connectors feature a pre-polished ferrule (UPC/APC) that couples to the fiber being terminated by precision mechanical alignment and ensures low loss by using a proprietary refractive index matching gel.

Offering convenience, ease of use, and reliability, the assembly of the connector requires only standard fiber preparation tools and minimal space, making them easy to prepare in the field in under 2 minutes. Just strip the buffer, cleave and clean the fiber, and then insert the fixed-length fiber through the connector's ferrule. These connectors are optimal for field technicians with any level of experience.

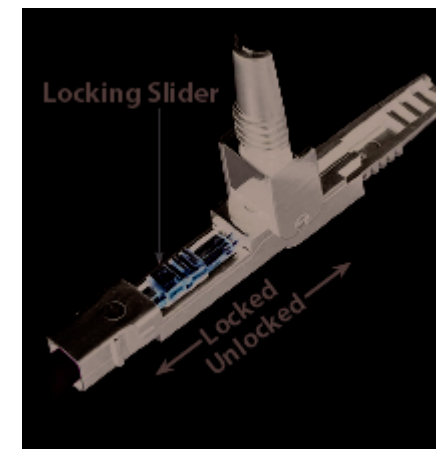
- [See the Spec Sheet](#)
- [Download the User Manual](#)
- [Watch the Video – Below](#)
- [See the Multicom Field Installable Fast Connectors webpage](#)



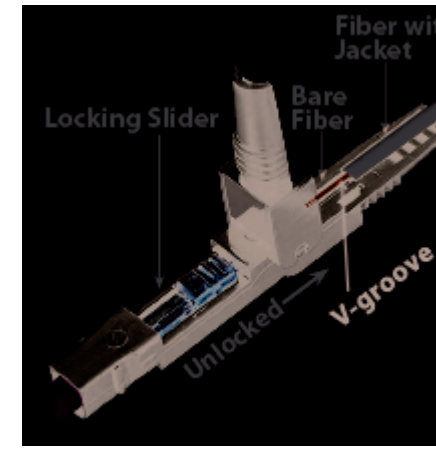
Features:

- Quick and easy fiber termination in less than two minutes
- No epoxy, fiber polishing, special tools, or fusion splicer required
- Precision mechanical alignment insures low insertion loss
- High optical performance
- Uses proven, molded v-groove technologies

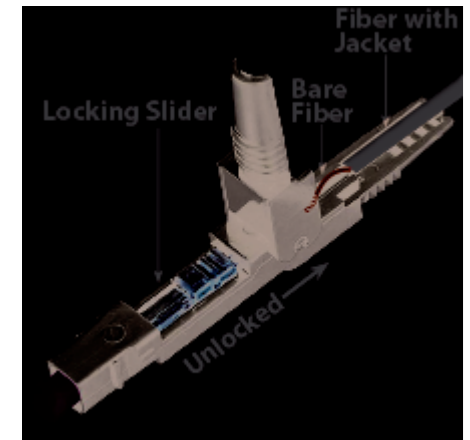
The Multicom Field Installable Fiber Optic Fast Connectors are easy to install in less than 2 minutes by a technician of any level of expertise! The steps below walk you through the installation. These instructions apply to both APC and UPC connectors. You can also [Download the User Manual](#).



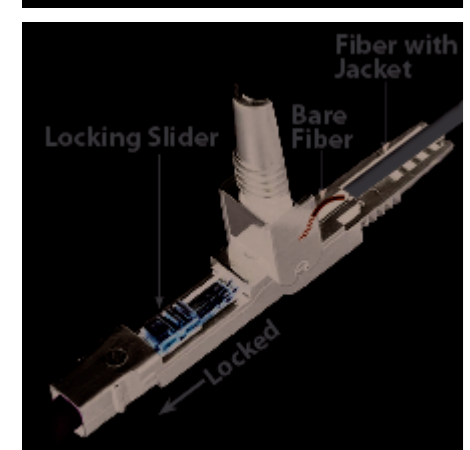
Important! The yellow locking slider serves two functions. The right-most position (towards the fiber) allows the fiber to be put into the proper position in the connector. In the left-most position, it securely locks the fiber into place.



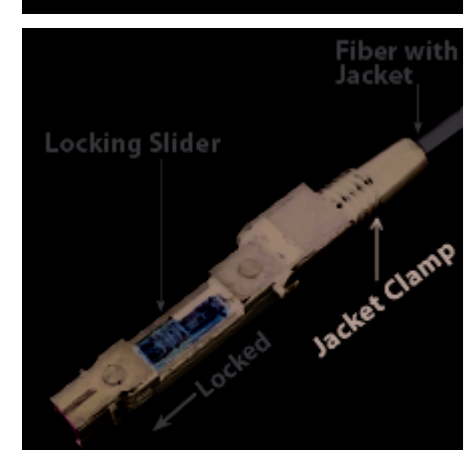
Ensure the yellow slider is in the unlocked position. Place the prepared fiber along the V-groove of the connector.



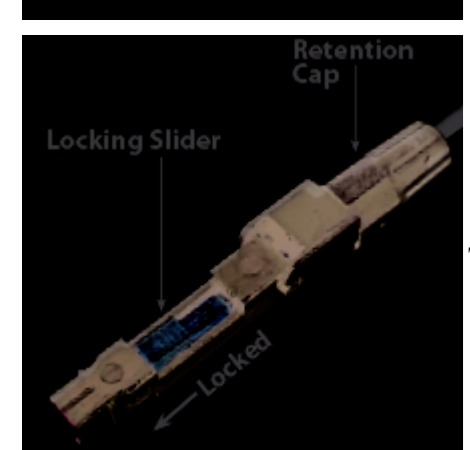
Slide until the bare fiber slightly arches up, this means it has gone as far as it is supposed to.



Lock the yellow slider.



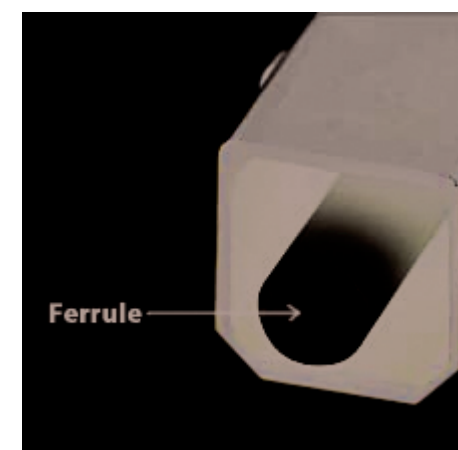
Close the Jacket Clamp.



Twist on the Retention Cap.

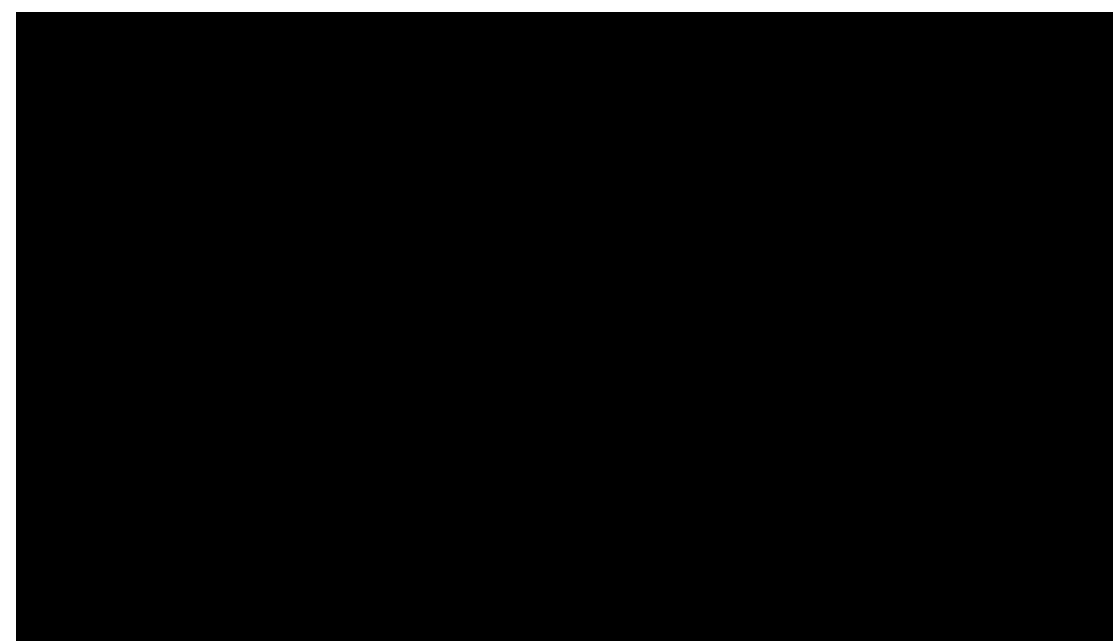


Slide on the Connector Housing making sure that the notch is on the bottom of the connector. The connector is now installed onto the end of the fiber optic cable and ready for use.



Using a [Multicom Fiber Optic Cleaner Cassette](#) or 1-Click, ensure the ferrule is clean before use.

For instructions on how to prepare the optical fiber including stripping, cleaning, inserting the fiber into the fiber optic cleaver, and then installing the prepared fiber into the field installable fiber optic fast connector, please see our instructional video:





Specifications:

Connector Type: SC/LC/FC, Simplex
Cable Diameters: 0.9 / 2.0 / 3.0mm
Fiber Mode: Singlemode / Multi-Mode
Polish: APC / UPC
Insertion Loss: APC: ≤ 0.35 dB, UPC: ≤ 0.35 dB
Return Loss: APC: ≥ 50 dB, UPC: ≥ 45 dB
Tension Test: ≥ 50 N
Operating Temperature: $-40^{\circ}\text{C} \sim +75^{\circ}\text{C}$
Compliance: Designed to Telcordia GR-20-CORE, GR-326 and TIA/EIA 568C, RoHS

[See the Spec Sheet](#)

[Download the User Manual](#)

[See the Multicom Field Installable Fast Connectors webpage](#)

Find Your Distributor



Multicom sells products both domestically and in many international locations. We would be happy to help you find your nearest distributor.

Multicom vende productos tanto a nivel nacional como en muchos lugares internacionales. Estaremos encantados de ayudarle a encontrar su distribuidor más cercano.

First Name (required)

Last Name (required)

Your Email (required)

Company (required)

Country (required)

City and State - U.S. and International (required)

Telephone Number (required)

Please provide any additional information about you or your interests:

Fusion Splicer Comparison Chart



The tough and rugged [Multicom Family of Fiber Optic Fusion Splicers](#) are drop/impact, dirt/dust, and water-resistant – and they come with an **unmatched 3 Year Domestic Warranty (MUL-FSPLICE-200 & 300), 2 Year Domestic Warranty (MUL-FSPLICE-150), or a 1 Year International Warranty (MUL-FSPLICE-150, 200 & 300)**. All Fusion Splicers employ high-speed image processing and special positioning technology allowing the fusion splicing to be completed in as little as a FAST 7 seconds and can heat shrink in as little as an ULTRA-FAST 9 seconds (8 & 10 seconds for the MUL-FSPLICE-150). The Fusion Splicers are compact in size, lightweight, and ideal to work just about anywhere including harsh outdoor environments, dark and remote worksites. [See the video!](#)

After being a ‘Best Seller’ for years, the MUL-FSPLICE-200 Kit has been replaced by the New MUL-FSPLICE-300 Kit, which is equally fast and powerful, and with the same premium warranty, but has a titanium alloy frame and is equipped with a six-motors under the hood for even more precision, ease, and accuracy while splicing – as well as more benefits. [See the New MUL-FSPLICE-300 Kit here!](#) Why six motors? See Below.

Multicom Fusion Splicers are more than merely Fusion Splicers alone, they come as all-inclusive kits that include:

- MUL-FSPLICE-150, 200 or 300 Fiber Optic Fusion Splicer
- Quick-change rechargeable lithium battery
- **Universal fiber optic fiber holders**
- **Precision Optical Fiber Cleaver**
- USB Thumb Drive with Operating Manual
- Hardcopy of Operating Manual
- Splice-on Connector Adapter
- Non-conductive Tweezers

- 3-Hole Fiber Stripper
- Sheathing Stripper
- Power Cord & AC Adapter
- Spare Electrodes
- Heat Shrink Cooling Tray
- Cleaning Bulb



Below is a convenient chart comparing the Multicom [MUL-FSPLICE-150](#), MUL-FSPLICE-200, and [New MUL-FSPLICE-300](#) with some of the finest fusion splicers on the market today:

After being a 'Best Seller' for years, the MUL-FSPLICE-200 Kit has been replaced by the New MUL-FSPLICE-300 Kit, which is equally fast and powerful, and with the same premium warranty, but has a titanium alloy frame and is equipped with a six-motors under the hood for even more precision, ease, and accuracy while splicing – as well as more benefits. [See the New MUL-FSPLICE-300 Kit here!](#) Why six motors? See Below.

Why does choosing the right Fusion Splicer matter?

Fusion Splicers have a built-in integrated system of internal processors, motors, and microprocessors that dictate the correct alignment of fibers. But Fusion Splicers have different ways of aligning fibers during fusion – a difference that can impact alignment precision and splicing performance. If you don't get the correct alignment, you're going to have fiber optic losses which will be an impediment to data transmission at the point of the fusion splice. So you have to pick the right splicer to fuse any two fibers so precisely that light travels through the medium with as close to zero loss as possible.

Multicom Fusion Splicers use the State-of-the-Art Core-to-Core Fiber Profile Alignment System (PAS), to melt two optical fibers together at their end faces. The resulting joint, or fusion splice, permanently joins the two glass fibers end to end so that optical light signals can pass flawlessly from one fiber into the other with as close to zero loss as possible. Fusion Splicers come with a multitude of components that affect the speed at which they work, the quality of the final splice, as well as how long they can be used in the field before charging the battery, and general maintenance.

Why 6 motors?

Multicom's [MUL-FSPlice-300](#) uses 6 Motor Technology:

- 2 Driving Motors
- 2 Aligning Motors
- **2 Focusing Motors – These motors are not included in 4 Motor Fusion Splicers**

The two additional Focusing Motors are installed on the optical lens. The motors will change the distance between the fiber and lens to make an enhanced focusing image. Once the fiber is placed in the holders, the motors will drive the lens closer or further away from the fiber, so the fiber image will be displayed differently visually on the monitor. Then the software will process the image and auto-ID the fiber type.

For instance, if a user puts Singlemode fiber in the left holder of the splicer and a Multi-mode fiber in the right holder, after closing the cover, the auto-focusing kicks in – based on the reflection ratio, the preset software will identify the fiber type and the 6 Motor Fusion Splicer will give a warning that there are two different and incompatible fiber types about to make a fusion.

How does a Fusion Splicer work?

Before optical fibers can be successfully fusion-spliced, they need to be carefully stripped of their outer jackets and polymer coating, thoroughly cleaned, and then precisely cleaved to form smooth, perpendicular end faces. Once all of this has been completed, each fiber is placed into a holder in the splicer's enclosure. From this point on, the fiber optic fusion splicer takes over the rest of the process which includes alignment, burn-off, and the actual fusion.

-

GPON Network Components - Features and Advantages

Let's Take a Closer Look at GPON Networks

Gigabyte Passive Optical Network, known as GPON, rely on fiber optic cables to deliver video, data and voice signals. GPON networks are currently the leading form of Passive Optical Networks (PONs), and offer up to a 1:64 ratio on a single optical fiber, meaning, a single fiber from the OLT can deliver video, data and voice signals to up to 64 end users (or residences).

Typical GPON Network with and without WiFi:

Image Slide



- [General](#)
- [SEO](#)
- [Crop](#)
- [Schedule](#)

Caption

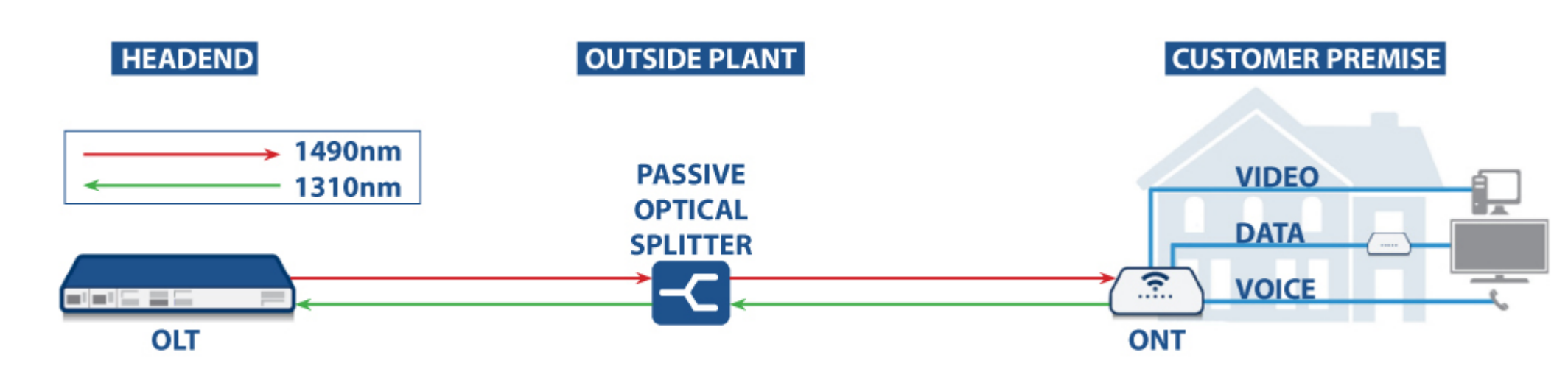
Use the image caption

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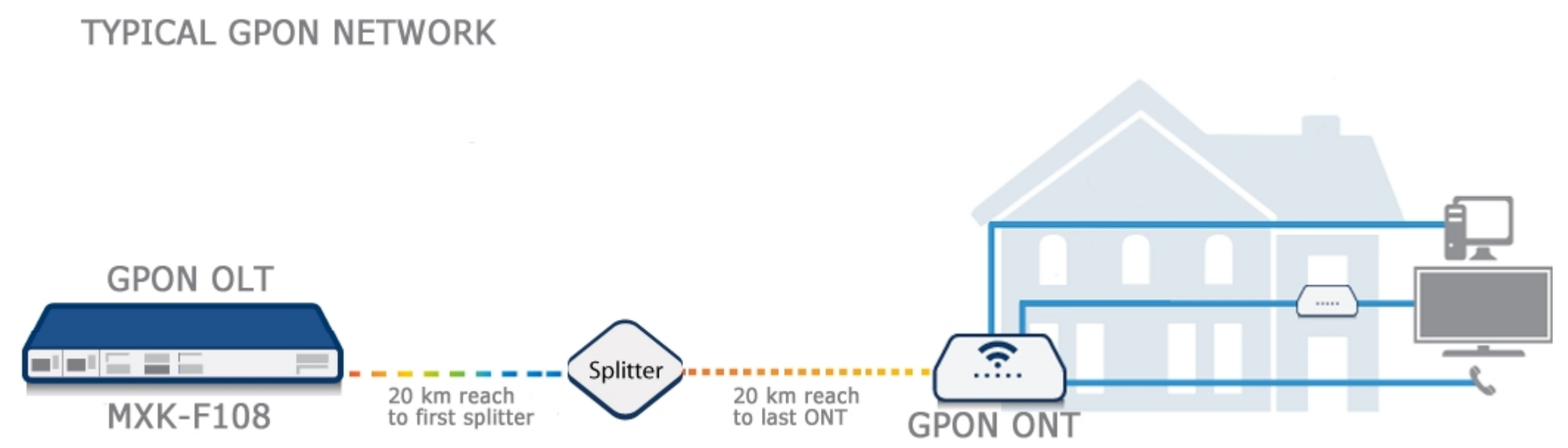
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Compared to the standard copper wire in most distribution networks, GPON networks are 95% more energy efficient – they use economical light signalization over fiber optic cable, as opposed to electrical signals over copper and coaxial cable. In addition to efficiency, Gigabyte Passive Optical Networks provide a low cost solution to adding new users by using optical splitters, which makes it easy to add and manage new customers, making GPON networks very desirable in populated areas.

The following image shows how the GPON OLT device deployed in a typical GPON network delivers services to end users by way of a GPON ONT installed inside the house:



A typical GPON network is pretty straightforward. It consists of an OLT (Optical Line Terminal), ONT (Optical Network Terminal, and sometimes called an ONU, Optical Network Unit), and an optical splitter. Signals from the central office OLT transmits to the splitter, then the splitter spreads the signal to the GPON ONT which resides inside the home of the end user. From the ONT, the end user can connect all of their personal video, data and voice, data and voice devices like computers, televisions and VoIP phones.



Simply put: GPON networks include a shared Optical Line Terminal (OLT) in the network central office, a dedicated Optical Network Terminal (ONTs), at each subscriber location, and a one-to-many optical splitter in the Optical Distribution Network (ODN).

Let's breakdown the components of a typical GPON network:



DZS OLT: MXK-F108

The OLT is the ultimate network manager and controls all of the GPON network traffic, in the form video, data and voice signals, and sends them downstream to the ONTs on the other end. The OLT also receives these signals from the end user's ONT, and sends them on their way to their destination over the Internet.

To ensure that the downstream and upstream signals do not interfere with each other, they are sent on different light wavelengths. Downstream traffic is sent at 1550nm (video), and 1490nm (data and voice), and upstream traffic is sent back at 1310nm.

[Learn more about DZS's OLTs](#)

Optical Network Terminal (ONT):



DZS ONT: ZNID-GPON-2728A-NA

The ONT is an 'optical modem' that connects to the opposite end of the OLT – at the end user's residence. It acts as the interface with the end user's equipment – computers, televisions, WiFi, VoIP phones, etc. Data received from the end user is then aggregated, optimized and sent by the ONT to the upstream OLT. ONT's also have the ability to broadcast WiFi throughout the end user's home – see how below.

[Learn more about DZS's ONTs](#)

The ONT is also known as Optical Network Unit (ONU). ONT is an ITU-T term, while ONU is an IEEE term. They both refer to the end user side equipment in a GPON network. A small difference between them might be the application locations. ONUs can work in different temperature and weather conditions.

Fiber Optic Splitter:



Multicom's F-NAP – An outdoor enclosure that houses a fiber optic splitter

Optical Splitters play an important role in GPON networks by allowing a single fiber optic cable to be shared, or split, among many end users. Optical Splitters are installed in each GPON network between the GPON OLT and the GPON ONTs that the OLT serves. Although it sounds simple, splitting level and ratio designs must be taken into consideration when designing a GPON network. For example, one optical splitter can provide video, data and voice services for up to 64 end users in a number of topographies including centralized, where one splitter distributes the signals to 64 end users; and cascade splitting, where one splitter distributes the signals to other splitters which then delivers the signals to up to 64 end users.

[See the Multicom M-FNAP here...](#)

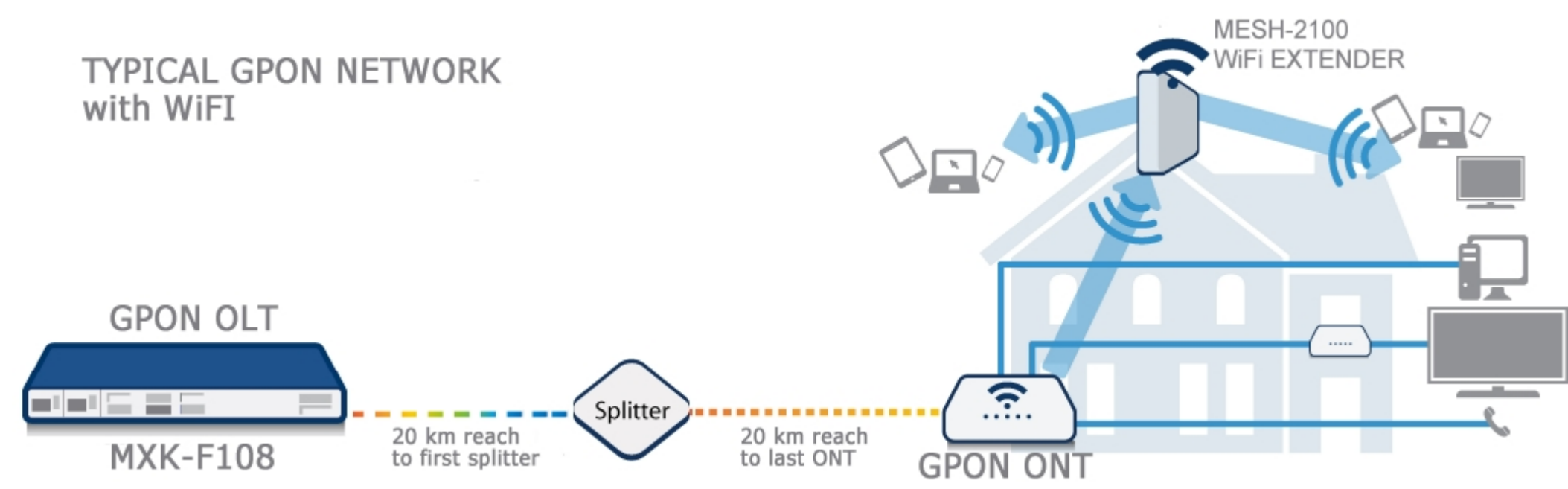
Another Feature of the ONT: WiFi



DZS's – MESH-2100

Not only does the ONT have the ability to deliver video, data and voice traffic for the end user devices, most can also broadcast WiFi signals throughout the house. Connecting a DZS MESH-2100 to the GPON ONT provides the ability to connect WiFi enabled devices to the ONT to both receive and send over the GPON network the same as wired devices.

A typical GPON network that includes WiFi would look like this:



[Learn more about DZS's Whole Home WiFi](#)

Features of GPON Networks:

- Provide downstream speeds of 2.5 Gbps and upstream speeds of 1.25 Gbps.
- Support long distances of up to 20 km and unlike copper does not suffer from decreasing performance over distance.
- Standards-based equipment are available from a large and growing number of vendors giving service providers peace of mind of being locked into a single vendor.
- Inherently secure wherein wiretapping, eavesdropping, and other hacking is nearly impossible.

Advantages of GPON Networks:

The most obvious advantage of PON networks is that a single shared optical fiber can support multiple users through the use of inexpensive passive optical splitters. In GPON networks, up to 64 ONTs can share one fiber connection to the OLT. This makes Gigabit Passive Optical Network an attractive option for service providers wanting to replace copper networks with fiber, particularly in high-density urban areas.

- Allow service providers to deliver more capacity to carry bandwidth-intensive applications.
- Provide one of the most cost-effective ways for service providers to deploy fiber.
- Provide a future-proof mode of access as the speed of the broadband connection is limited by the terminal equipment rather than the fiber itself. Future speed improvements can be achieved via equipment upgrades before any upgrades on the fiber itself.

How far does GPON reach?

The distance between the GPON OLT and the ONT is generally determined by the launch power of the optical transmitter, receive sensitivity of the far-end receiver, and the optical loss associated with the optical distribution network (ODN). Optical loss comes primarily from connectors, splices, and splitters.

The total GPON distance is a trade-off between distance and split ratio. For instance, if the split ratio is very low, it allows for longer distances (as far as 40km), but if the split ratio is very high, up to 128 splits enabling more subscribers, the overall distance from the splitter to the ONT is decreased.

Think of it this way: Say you have a garden hose with water under normal pressure, and you attach a showerhead with 128 holes. Then you plug up all but 3 of those holes, the holes that are open will squirt out water very far (as far as 40km, providing services to those 3 end users). However, if you put on that same showerhead and unplug all 128 of the holes, the water won't go far (as far as 20km), but it will saturate the immediate area (provide services for up to 128 end users). Important to remember: The overall water capacity of the hose is not impacted by the distance or split ratio – it will still carry all of the water from the source to the end, no matter what type of showerhead is attached.



DZS offers a wide range of GPON Products and Solutions for GPON Networks ranging from OLTs that serve many thousands of customers, to WiFi enabled ONTs that reside at the residential user's home.

[Request a Quote](#)

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[Learn More about GPON Migration](#)

DZS's MXK-F Series of GPON OLTs

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[ZNID Series of GPON ONTs](#)

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[Whole Home WiFi / CONNECT](#)

DZS GPON - CAF II Bandwidth & Latency Testing for FCC Ruling DA-18-710A1

The Test Module add-on for CONNECT-ACS – in compliance with FCC Mandated Testing for All High-Cost, Subsidy Recipients – part of [DZS-CONNECTION Software Suite](#), has been designed to meet the FCC testing requirements as outlined in FCC Ruling DA-18-710A1. This CONNECT ACS Module is capable of CAF II Bandwidth & Latency Testing in accordance to DA-18-710A1.

Who is affected: FCC Requirements from FCC document DA-18-710A1:

“Certain recipients of Connect America Fund (CAF) high-cost universal service support, including price cap carriers, rate-of-return carriers, rural broadband experiment (RBE) support recipients, Alaska Plan carriers, and CAF Phase II auction winners.”

Introduction and Clarification from FCC document DA-18-710A1:

All carriers which receive government subsidy to provide broadband in “high-cost” areas, must perform the tests. Basically, that is almost every tier 2 and tier 3 carrier in the USA.

A glossary of terms provided by the Universal Service Administrative Company (the glossary), heretofore referred to as USAC, can be downloaded from the web. The glossary and other documents can be accessed at [www.usac.org](#). All acronyms are defined within the glossary.

In Accordance to FCC Requirements: CAF II Bandwidth & Latency Testing from FCC Document DA-18-710A1:

Subsidies were determined to be allocated along four separate performance tiers and by two separate latency tiers with funding preference given to providers offering faster speeds, lower latency, and larger data usage allowances.

Performance Tier	Speed	Usage Allowance	Weight
Minimum	≥ 10/1 Mbps	≥ 150GB	65
Baseline	≥ 25/3 Mbps	≥ 150 Gbps or US median, whichever is higher	45
Above Baseline	≥ 100/20 Mbps	≥ 2TB	15
Gigabit	≥ 1Gbps/500Mbps	≥ 2TB	0

The Test Module add-on for CONNECT-ACS, part of DZS-CONNECTION software suite has been designed to meet the FCC testing requirements as outlined in FCC Ruling DA-18-710A1. The ruling can be downloaded at [www.fcc.gov](#).

[DZS CONNECTION Suite](#)



- **CONNECT-ACS** – An ultra-modern and open auto configuration server based on the Broadband Forum technical specification TR-069 standard
- **CONNECT-DA** – Supports cloud based analytics This analytic engine runs in the cloud and its main goal is to aid with trend analysis by mining data gathered from the network
- **CONNECT-API** – An open RESTful API for customization and quick resolution of future issues.

[Learn more about the DZS CONNECTION Suite](#)

FCC Requirements from FCC document DA-18-710A1 – Key Points:

- USAC is the administrative arm and USAC determines the locations to be tested, not the carriers.
- Latency test must be conducted once per minute, for 6 hours, starting at 6 PM and ending at midnight, for 7 days each quarter.
- Download throughput test must be conducted once per hour, for 6 hours, starting at 6 PM and ending at midnight.
- Upload throughput test must be conducted once per hour, for 6 hours, starting at 6 PM and ending at midnight.
- All tests must have the packets terminate/originate at the closest of the 16 named IXPs or pass through them.
- All tests need not be performed on the same night. Latency testing can be week one, Download testing on another week and Upload testing on yet another week. All testing must be completed within the quarter.

FCC Requirements – What is it?

Speed and Latency testing of subsidized areas:

- Speed tests every hour – both upload and download
- Latency tests every minute
- Between 6pm and midnight for 7 consecutive days
- One week per quarter/per tier
- Number of customers tested per tier/per state:
 - 5 at a minimum
 - 10% of tier
 - 50 at a maximum
- Results of Speed test \geq 80% of results \geq 80% of speed tier
- Results of Latency test \geq 95% of results less than 100ms

[Learn more: FCC document DA-18-710A1](#)

[Learn more: DZS CONNECTION Suite](#)



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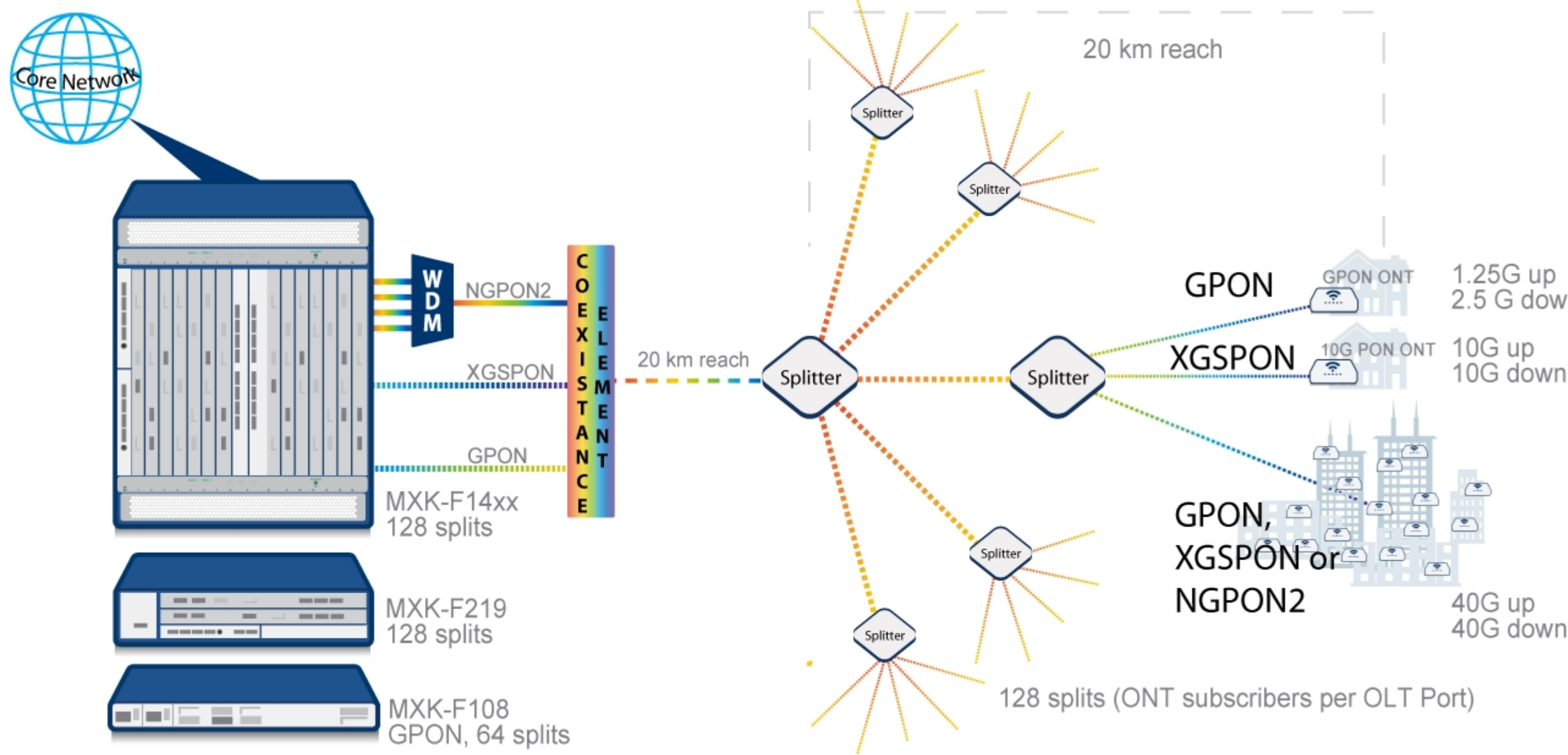
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[Whole Home WiFi / CONNECT](#)

DZS GPON - Migrating from GPON to XGS-PON and NGPON2

Broadband technology and broadband markets are constantly evolving. Service providers need an optical distribution network (ODN) which not only supports today's requirements for data, video and voice with QoS, SLA agreements and security, but also tomorrow's requirements.

Today bandwidth scalability from GPON (2.5 Gigabit downstream/1.25 Gigabit upstream) to XGS-PON (10 Gbps upstream and downstream) and even NGPON2 (40 Gbps upstream and downstream) services are key drivers when selecting GPON OLT and ONT products – which not only future proof your investment, but provide a quick ROI.



FTTH PON Options with 10G Migration

DZS' [MXK-F and V-series OLTs](#) support GPON and XGS-PON (and NGPON2) in the same modular chassis and on the same ODN, providing an easy migration path to 10G services. With a complementary portfolio of ONTs, DZS provides a complete fiber to the home or business solution.



DZS's MXK-F1421 – Modular High Capacity OLT

DZS' OLTs scale from 512 subscribers in a price conscious [MXK-F108](#) fixed interface GPON OLT up to over 32 thousand subscribers in the High Density, High Performance Modular PON/Active Ethernet [OLT MXK-F1421 Chassis](#).

For any size network there are options which provide good price points with room to grow across the capacity and throughput range. Add either low cost or high capacity [ONTs](#) with a large combination of interface options and DZS provides network solutions to fit your network's FTTx needs.

DZS [OLT](#) options can be installed in Central Data Centers or remote field cabinets to provide Gigabit Broadband Internet Services to rural customers. There are also a complementary set of ONUs, which transform fiber to copper for solutions where G.fast, VDSL (up to 35B) or other CO, cabinet or closet based DSLAMs will take advantage of existing phone lines in homes, apartments or businesses.

[Learn more about the MXK-F and V-Series OLTs](#)

[Z-5225A](#) – ZNID 10GS, 10Gbe NGPON/XGSPON/AE



DZS' revolutionary indoor residential 5200 series 10Gbe NGPON/XGSPON/AE ONTs are designed for advanced residential 10GbE triple-play deployments in Fiber-to-the-Home/Premise applications, and for symmetrical Business Services with MEF certification.

[Learn more about the Z-5225A – ZNID 10GS](#)



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[Whole Home WiFi / CONNECT](#)

DZS GPON - MXK-F Series of GPON OLTs

The MXK-F™ chassis architecture is designed around a dual star design with redundant ultra high-speed links to each subscriber line card slot for future-proof support of today's and tomorrow's bandwidth-hungry fiber-based subscriber services. Also MXK-F™ management control and aggregation switch fabric functions reside on two separate cards, each of which can be equipped in a redundant configuration; MCs (Management Cards) and FC (Fabric Cards). Lastly, a fully-distributed database and parallel firmware loading enable simple fast upgrades.

With a solid, wide foundation to build upon, MXK-F™ is well-suited as high-density fiber-based service platform to cost-effectively deliver ITU-T G.984 GPON, IEEE 802.3-2008 1 and 10Gb/s Active Ethernet, ITU-T G.987 XGPON1, ITU-T G.989 NGPON2, and other advanced fiber-based services for residential triple play and high-bandwidth business services over any FTTx architecture.

[MXK-F108 – Fixed interface 1RU OLT](#)



The MXK-F108 high throughput, small form factor OLT serves 512 GPON Customers at 64 Optical Split Per OLT Port.

Up to 40Gbps uplinks for redundancy or throughput.

- 1RU 8 port GPON OLT AC power model: MXK-F108-AC-NA
- 1RU 8 port GPON OLT DC power model: MXK-F108-SDC
- GPON B+ SFPs (goes in GPON port): MXK-GPON-SFP-B+-RSSI
- 10Gig SFP+ (uplink port): MXK-10GE-SFP+-SR

[Learn more about the MXK-F108](#)

[MXK-F219](#) – Chassis High Performance Compact, Modular 2RU PON/Active Ethernet OLT



Serving over four thousand subscribers, the MXK F219 2RU OLT offers growth potential up to 4,096 customers at 128 GPON splits per OLT port.

For Service Providers serving beyond 512 customer subscribers, The MXK-F219 has two subscriber card slots for GPON or Active Ethernet cards, and two Management/Uplink slots for throughput or redundancy. The MXK-F219 uses the same line cards as the 14RU MXK-F14xx chassis. With the same backplane as the MXK-14xx, the MXK-F219 is also a powerful compact OLT, providing more than enough bandwidth to support four thousand subscribers.

- MXK-F219 two line card chassis: MXK-CHASSIS-F219
- 16 port GPON line card (two per chassis): MXK-LC-GP16-3
- 16 port GPON line card (two per chassis): MXK-LC-GP16-5 with non-blocking capability
- 16 port XGS-PON two slot line card (will also support NGPON2, when available, one per chassis): MXK-LC-NGPS16
- Management/Uplink card (two per chassis): MXK-MC-AETG2-TOP
- XGS-PON SFP goes in XGS-PON OLT PORT: XCVR-XGS-XPOLT-N2-CA
- GPON B+ SFPs (GPON OLT port): MXK-GPON-SFP-B+-RSSI
- 10Gig SFP+ (uplink port): MXK-10GE-SFP+-SR

[Learn more about the MXK-F219](#)

[V8106 Chassis](#) – High Performance Modular 6RU PON



Serving over twelve thousand subscribers, the V8106 provides up to 12,288 customers at 128 GPON splits per OLT port.

Along with the two interface module V8102, the 6RU V8106 has six service interface modules with 16 OLT ports per module. The V8106 provides a total uplink capacity of 80 Gbps.

- V8106 six interface unit chassis: DPW-G-P-8106CH-F0
- 16 port GPON Serial Interface Unit (six per chassis): DPW-G-P-81S116-G0
- Network Interface Unit (two per chassis): DPW-G-P-81XGE4-00
- Switching Fabric Unit/ Management Module for V8106 (two per chassis): DPW-G-P-8106SF-G2
- GPON B+ SFPs (GPON OLT port): MXK-GPON-SFP-B+-RSSI
- 10Gig SFP+ (uplink port): MXK-10GE-SFP+-SR
- DC Power Supply Unit (two per chassis): DPW-G-P-8106DC-G0

[Learn more about the V8106 Chassis](#)

[MXK-F1421](#) & [MXK-F1419](#) – High Density, High Performance Modular PON/Active Ethernet OLTs



Serving over 32 thousand GPON subscribers, the MXK F1421 offers growth potential at 128 GPON splits per OLT port and 2 x Terabit switching fabric.

DZS' flagship, the MXK-F14xx OLTs, offer un-paralleled investment protection for Service Providers: ILEC, CLEC, ISPs, Electric Cooperatives, Municipalities, WISPs, and MDUs who want world class protection from an OLT chassis that offers GPON, XGS-PON, and high capacity Active Ethernet Services simultaneously, providing Data, Video, and Voice Internet services to residential and business customers.

- 16 Slot MXK F1421 Chassis: MXK-CHASSIS-F1421 or 14 Slot MXK F1419 Chassis: MXK-CHASSIS-F1419
- 16 port GPON line card (16 or 14 per chassis): MXK-LC-GP16-3
- 16 port GPON line card (16 or 14 per chassis): MXK-LC-GP16-5 with non-blocking capability
- 16 port XGSP-ON two slot line card (will also support NGPON2, when available, seven or eight per chassis): MXK-LC-NGPS16
- Uplink card (two per chassis): MXK-FC-AETG8 (8x10G) or MXK-FC-AEFG2-AETG8 (2x40G and 8x10G)
- Management Card (two per chassis): MXK-MC-TOP
- XGSPON SFP goes in XGS-PON OLT PORT: XCVR-XGS-XPOLT-N2-CA
- GPON B+ SFPs (GPON OLT port): MXK-GPON-SFP-B+-RSSI
- 40Gig QSFP+ (uplink port): XCVR-AE-QSFP
- 10Gig SFP+ (uplink port): MXK-10GE-SFP+-SR

[Learn more about the MXK-F1419](#)

[Learn more about the MXK-F1421](#)

[MXK-F14xx XGS-PON](#)



MXK-F14xx XGS-PON configuration serving over 16 thousand XGS-PON Customers at 128 GPON splits per OLT port.

- 16 Slot MXK F1421 Chassis: MXK-CHASSIS-F1421 or 14 Slot MXK F1419 Chassis: MXK-CHASSIS-F1419
- 16 port 10GPON 2 slot line card (8 or 7 per chassis): MXK-LCNGPS16
- Uplink card (two per chassis): MXK-FC-AETG8
- Management Card (two per chassis): MXK-MC-TOP
- XGS-PON SFP goes in XGS-PON OLT PORT: XCVR-XGS-XPOLT-N2-CA
- 40Gig QSFP+ (uplink port): XCVR-AE-QSFP
- 10Gig SFP+ (uplink port): MXK-10GE-SFP+-SR

[Learn more about the MXK-F14XX XGS-PON](#)

ZMS, FCAPS Network Management Solution

DZS Network FCAPS Element Management system (ZMS) enables you to provision your Data, Voice, and Video Internet Bandwidth Packages. The ZMS EMS Software solution can be loaded on your own local server and has the capacity and flexibility to remotely provision and serve thousands of residential FTTH GPON or 10Gigabit Internet Voice, Video, and Data services to multiple OLT Chassis in your Central Data Center or Remote Field Locations. The EMS will enable you to setup bandwidth packages to your customers, set up user profiles, manage devices and VLANs. view device alarms like battery and dying gasp alarms, monitor and troubleshoot your network with FCAPS capabilities:

- **Fault Management.** Identify and alert issues to operator
- **Configuration Management.** Establish and maintain consistent performance, functionality through provisioning templates
- Database backups and synchronization of network elements
- **Performance Management.** Maximize throughput, avoid bottlenecks and allow monitoring of system performance and diagnostic parameters
- Protect network against unauthorized users

Part Number: ZMS-VA-5000 (Serves 1-4096 customers)

Part number: ZMS-NMS-TR1 (Serves 1-10k plus customers)



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[ZNID Series of GPON ONTs](#)

DZS also offers a Wireless Access Point/Repeater and an ACS software suite

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DZS GPON - ZNID Series of GPON ONTs

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[INDOOR GPON ONT](#)



[ZNID-GPON-2301](#)

- Indoor Residential HSI Desktop ONT
- Built-in WAN transceiver, 1 RJ45 GE, ships with AC power supply, OMCI management
- Optional wall mount

[Learn more about the ZNID-GPON-2301](#)



[ZNID-GPON-2424A1-NA](#)

- Indoor HSI Voice RG GPON ONT
- Built-in WAN transceiver, 4 RJ45 GE, 2 RJ11 POTS, 1 USB, UPS, desktop, ships with AC power supply, ZNID RG software
- Optional wall mount, BBU wall mount cradle, desktop dock

[Learn more about the ZNID-GPON-2424A1-NA](#)



[ZNID-GPON-2425A1-NA](#)

- Indoor HSI Voice RF RG GPON ONT
- Built-in WAN transceiver, 4 RJ45 GE, 2 RJ11 POTS, 1 BNC RF coax, 1 USB, UPS, ships with AC power supply, ZNID RG software
- Optional desktop, wall mount

[Learn more about the ZNID-GPON-2425A1-NA](#)



[ZNID-GPON-2628T-NA](#)

- Indoor HSI Power over Ethernet Voice RG ONT
- Built-in WAN transceiver, 8 RJ45 PoE GE, 2 RJ11 POTS, UPS, ships with AC power supply, ZNID RG software

optional wall mount, BBU wall mount cradle, desktop dock

[Learn more about the ZNID-GPON-2628T-NA](#)



[ZNID-GPON-2727A1-NA](#)

- Indoor HSI Voice RF BGNAC WiFi RG GPON ONT
- Built-in WAN transceiver, 4 RJ45 GE, 2 RJ11 POTS, 1 BNC RF coax, 2x2 b/g/n (600mW) 3x3 a/n/ac (400mW), 1 USB, UPS, standup table top with wall mount, ships with AC power supply, ZNID RG software

[Learn more about the ZNID-GPON-2727A1-NA](#)



[ZNID-GPON-2728A1-NA](#)

- Indoor HSI Voice Quantenna BGNAC WiFi RG GPON ONT
- Built-in WAN transceiver, 4 RJ45 GE, 2 RJ11 POTS, 3x3 b/g/n (600mW) 4x4 a/n/ac (400mW) Quantenna, 1 USB, UPS, standup table top, wall mount

[Learn more about the ZNID-GPON-2728A1-NA](#)



[Z-5225A](#)

- One platform to support all major next gen PON
- NGPON, XG-PON1, XGS-PON, 10GE AE
- One Model supports various 10G PON/AE SFP+ transceivers
- Includes 10G copper LAN port

[Learn more about the Z-5225A](#)

OUTDOOR GPON ONT



[ZUID-GPON-4222A](#)

- Outdoor HSI Voice GPON SFU ONT
- With or without clam shell enclosure
- Built-in WAN transceiver, 2 RJ45 GE, 2 RJ11 POTS

[Learn more about the ZUID-GPON-4222A](#)



[ZUID-GPON-4226](#)

- Outdoor HSI Voice GPON SFU ONT
- With or without clam shell enclosure
- Built-in WAN transceiver, 6 RJ45 GE, 2 RJ11 POTS

[Learn more about the ZUID-GPON-4226](#)



[ZUID-GPON/GE-6024T](#)

- PoE Business ONT, 2 SFP based WAN ports
- Indoor, Dual SFP Uplink, Can be GPON or Active Ethernet with switchover capabilities, may be placed in small outdoor cabinet
- 25 RJ45 PoE GE LAN, ZUID RG software

[Learn more about the ZUID-GPON/GE-6024T](#)

To achieve optimum cost efficiency and to maximize service differentiation, service providers building FTTx networks demand ONTs well tuned to their specific requirements. In response to the broad scope of these requirements, DZS has leveraged deep experience in managing the complexity of multi-service access to build the industry's most comprehensive portfolio of FTTx customer premise equipment, for both Active Ethernet and GPON standards.



DZS offers a wide range of GPON Products and Solutions for GPON Networks ranging from OLTs that serve many thousands of customers, to WiFi enabled ONTs that reside at the residential user's home.

[Request a Quote](#)

GPON Network Components - Features & Advantages

A single fiber from the OLT can deliver video, data and voice signals to hundreds of end users, and understanding a GPON Network is easier than you think. Take a closer look at how a GPON OLT device deployed in a typical GPON network delivers services to end users by way of a GPON ONT installed inside the home.

[GPON Network Components](#)

The Need for Speed: Migrating your GPON Network to XGS-PON

Today bandwidth scalability from GPON (2.5 Gigabit downstream/1 Gigabit upstream) to XGS-PON (10 Gbps upstream and downstream) and even NGPON2 (40 Gbps upstream and downstream) services is a key driver when selecting GPON OLT and ONT products which not only future proof your investment, but provide a quick ROI.

[Learn More about GPON Migration](#)

DZS's MXK-F Series of GPON OLTs

DZS' OLTs, offer un-paralleled investment protection for Service Providers: ILEC, CLEC, ISPs, Electric Cooperatives, Municipalities, WISPs, and MDUs (Apt, Condo) who offers GPON, XGS-PON, and high capacity Active Ethernet Services simultaneously, providing Data, Video, and Voice Internet services to up to 32,000 residential and business customers.

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[Whole Home WiFi / CONNECT](#)

DZS GPON – Whole Home WiFi

DZS also offers a Wireless Access Point/Repeater and an ACS software suite, DZS-CONNECTION, which provides more than auto-configuration.

The DZS-CONNECTION suite is completely configurable and hardware neutral, enables building, monitoring and troubleshooting a wireless ecosystem in the home or office to support IoT devices, simplifying the effort and reducing the time to extend Whole Home WiFi services while providing freedom of choice without vendor lock-in.



[MESH-2100](#)

- Dual band WiFi Repeater
- 11AC/N, 4X4 5GHZ, 2X2 2.4GHZ, 1 RJ45 GEWAN, 4 RJ45 FE LAN

The [MESH-2100](#) is the ideal solution for building a carrier-class WiFi Network for home users. It allows the end user or the installer to build a WiFi ecosystem at the customer house that is simple to install and maximizes the quality of WiFi experience for the network users (implementing device steering and roaming).

[Learn more about the MESH-2100](#)



[DZS CONNECTION Suite](#)

- **CONNECT-ACS** – An ultra-modern and open auto configuration server based on the Broadband Forum technical specification TR-069 standard
- **CONNECT-DA** – Supports cloud based analytics This analytic engine runs in the cloud and its main goal is to aid with trend analysis by mining data gathered from the network
- **CONNECT-API** – An open RESTful API for customization and quick resolution of future issues.



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[Whole Home WiFi / CONNECT](#)

GPS Repeaters for Fire Stations

THE PROBLEM: When parked inside a fire station, receivers for location-based services can't receive a GPS signal due to the blocking effect of the building structure

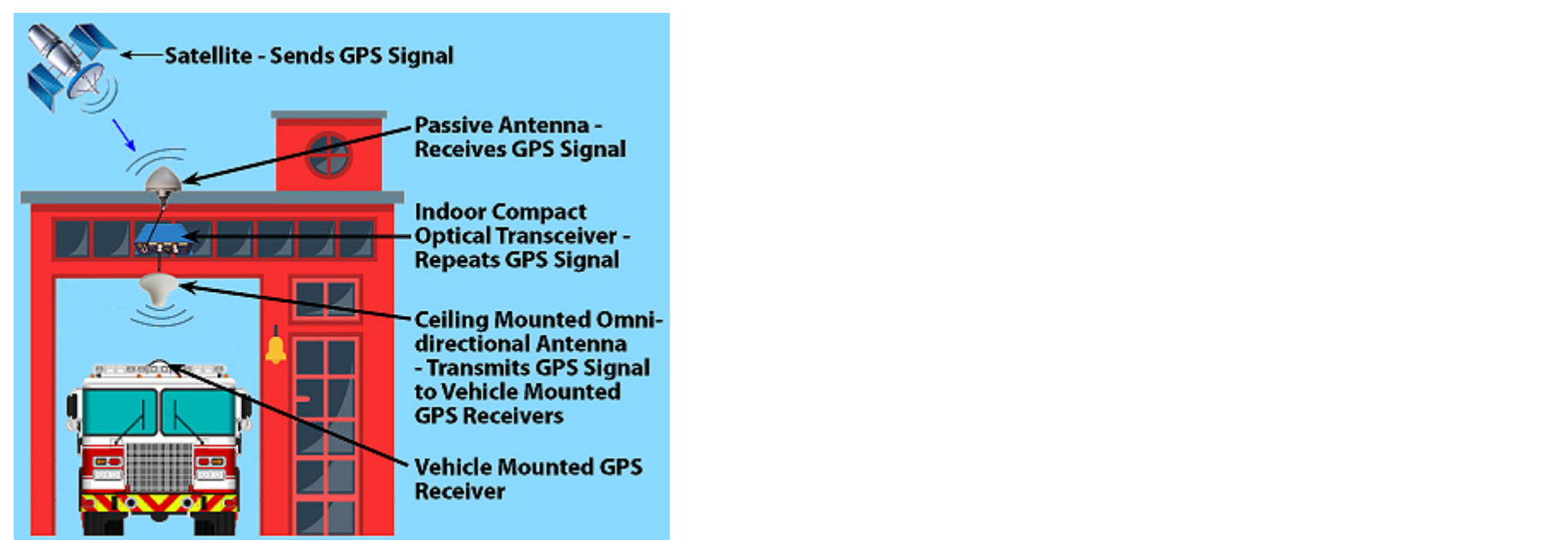


THE SOLUTION: Turnkey Satellite GPS Repeater System

A GPS Repeater System from Multicom Installed in a Fire Station Ensures:

- All rescue vehicles receive a “live” GPS satellite signal, whether inside the fire station or en-route
- Satellite navigation equipment in all rescue vehicles are “locked on” to the GPS satellites at all times when indoors
- When GPS equipped vehicles leave the station they already have GPS lock and will transmit accurate location data to the fire station
- There is zero satellite-acquisition delay when exiting the fire station
- No need to reboot the on-board system while en-route to an incident
- Used in fire stations throughout the United States

HOW IT WORKS: Repeat GPS Signals from Outdoor to Indoor



From satellite to GPS receiver on the rescue vehicle: Zero delay

GPS Repeaters are devices that are used to transmit signals to places where they cannot reach.

Repeaters operate by receiving satellite signals with an antenna located outside of a building, and re-transmitting the signals to the indoor area or covered space, resulting in consistent and uninterrupted access to signals in signal-blocked areas.

Intrigued? Call Mike, our GPS System Specialist, at 800-423-2594

Healthcare Solutions

Multicom is a leader in the design, manufacture and distribution of reliable high-performance video, wireless, data and voice products for the demanding needs of the healthcare market.



Areas Served



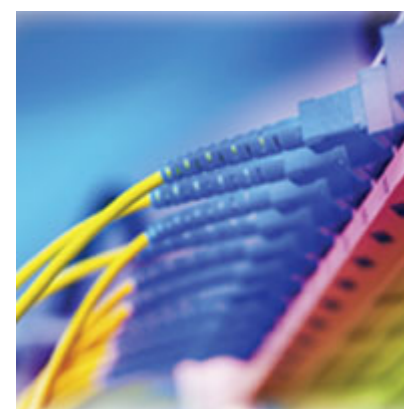
- Waiting Rooms
- Common Areas
- Patient Rooms
- Cafeterias
- Break Rooms
- Auditoriums
- Training/Classrooms

Solutions Provided



- Video
- Wireless
- Data
- Voice

Technology Available



- Fiber Optic Distribution: [GPON](#), [HFC](#)
- [Ethernet Switches/Routers](#)
- [Clear QAM Video](#)
- [WiFi](#)
- [Coax Distribution](#)

Integrators and value-added retailers depend on Multicom's expertise to provide the [services, analysis, engineering and custom manufacturing](#) so they can support their customers in the installation, maintenance and growth of their businesses.

LNBs: What They Do, and How They Work

Satellite television is a miracle of modern technology, delivering clear, crisp picture and sound from satellites thousands of miles away, captured by a relatively small [satellite dish](#). The electronics that make this possible are designed to be weatherproof to withstand the test of time, although they do sometimes need replacing. Other times, you may want to upgrade your dish's capabilities, and occasionally that can be done without replacing the entire dish. All you need to do is replace the [LNB](#).

What is an LNB?



How an LNB works. Ever wonder what the difference is between an LNB and a LNBF? See below...

Most of a satellite dish is just plain metal. The only part that contains any electronic components at all is in the front of the metal arm. It's generally referred to as an LNB or sometimes LNBF, which stands for Low-Noise Block downconverter. (Depending on your satellite TV system, it can also perform other tasks, too.)

An LNB has two important functions: it's a low-noise amplifier, meaning that it takes the extremely weak satellite signal and amplifies it. It's also a block downconverter, meaning it takes the signals on the super-high satellite frequencies and converts them to lower frequencies. Both functions are important in order to deliver a satellite signal through a regular cable.

Satellite signals are very weak by the time they travel over 22,000 miles to your dish. The big, round, "dish" part of your dish acts as a lens, focusing as much signal as possible onto the LNB. The LNB amplifies that signal and sends it down the cable. There are other functions, too, but they're not as important as receiving the signal.

What's the Difference Between an LNB and a LNBF?

First of all, let's explain the terminology:



Multicom stocks
Single, Twin, Quad
and Octo LNBFs

LNB = Low Noise Block down-converter
LNBF = Low Noise Block down-converter **plus Feedhorn**

A Feedhorn is basically a metal funnel that guides the incoming signal to the actual antenna stub inside the throat of the LNB.

LNB's and LNBF's are both amplifiers used in satellite dishes. As with other signal amplifiers, they take the very faint signal they receive and magnify it so that it is powerful enough to use. This is the first step in taking the microwave signal coming from space and turning it into images and sounds for televisions and computers.

DESIGN
A simple LNB attaches to the feedhorn of a satellite dish. An LNBF is a more highly developed piece of technology, being a part of the feedhorn itself. For this reason, an LNBF can be smaller than an LNB with comparable capabilities.

FUNCTION
As you switch channels, the LNB switches polarity through the use of an exterior motor. With an LNBF, the polarity changes when the receiver changes the voltage going into it. This voltage shift causes it to switch back and forth between two different antenna probes (horizontal and vertical) within the LNBF itself.

USE
Larger, older satellite dishes generally use the older LNB's that are separate from the feedhorn. Smaller, newer satellite dishes generally use the more compact LNBF's. Because the industry has shifted almost completely to the use of LNBF's, many actually do not even make the "F" distinction anymore, as LNBF's are completely replacing LNB's anyway.

Multicom HD Encoder Information & User Manuals



MUL-HDENC-C-100-NA
High Definition Digital Encoder
User Manual



Download:
[MUL-HDENC-C-100-NA – High Definition Digital Encoder User Manual](#)



For more information on the
MUL-HDENC-C-100-NA, including the Spec Sheet, [See the Webpage.](#)



MUL-HDENC-C-200 (-NA, -MX, -CO, -LA)
With AC-3
High Definition Digital Encoder – Deluxe, Kit
User Manual



Download:
[Netceed – MUL-HDENC-C-200 – High Definition Digital Encoder – Deluxe User Manual](#)



This User Manual includes information for :

- **MUL-HDENC-C-200-NA** – USA: QAM
- **MUL-HDENC-C-200-MX** – MEXICO: ATSC
- **MUL-HDENC-C-200-CO** – COLOMBIA: DVB-T
- **MUL-HDENC-C-200-LA** – LATIN AMERICA: ISDB-T

For more information on the MUL-HDENC-C-200, including the Spec Sheet, [See the Webpage](#).

Also see:

-

National Cable Television Cooperative (NCTC)



Multicom has been named by the NCTC Group Purchasing Organization as a “Top Performer” in order processing metrics. [Learn more...](#)

Multicom, now Netceed, is your one-stop shop for all materials, distribution, and supply chain management solutions for the broadband and telecommunications industry, supporting FTTx, HFC, Wi-Fi, 5G/mobile, and data center technologies. With 13 locations across the U.S. and over 1 million square feet of indoor and outdoor warehouse and storage capacity, our one-stop shop makes it simple for NCTC members to purchase and install the products needed for its networks.

A banner for Netceed and Adtran. On the left is the Netceed logo (a green stylized 'N') and the word "Netceed" in white. On the right is the Adtran logo (the word "Adtran" in blue). Below the logos are three columns of text: "Adtran's OLTs form the core of cable networks", "Adtran's ONTs provide robust, cost-effective connectivity", and "Manufactured domestically to comply with 'Build America Buy America'". The background is dark with colorful, wavy light patterns.

Netceed is working with independent cable and network operators to accelerate core-to-edge technology innovation across every type of network.



Adtran SDX 620 Series – XGS-PON Optical Network Terminals

Design to support industry-leading voice, data, and video capabilities

[Learn more](#)



Adtran 5000 Series – Multi-service Access and Aggregation

Supports legacy and new service interfaces over copper and fiber

[Learn more](#)



Adtran 854-6 – Dual-Band Wi-Fi, Mesh

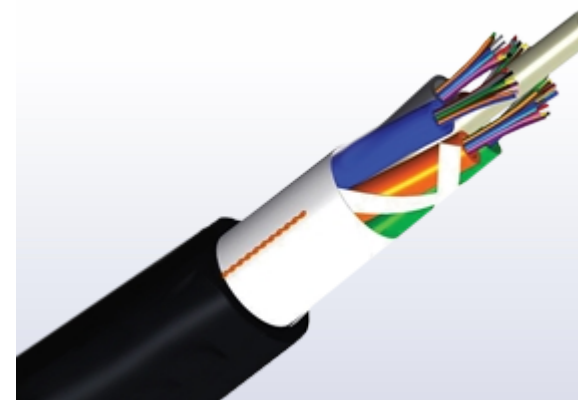
Ethernet Gateway w/2.5GE PortBuilt to extend fiber and multi-gig performance for buffer-free 4K/8K streaming

Next-gen active fiber optic components are critical in replacing complex optical systems with more compact and efficient alternatives.

[Learn more](#)

Neteceed is your one-stop-shop for core-to-edge network products and solutions to meet member needs

Fiber Optic Cable



- Corning
- Prysmian
- CommScope

Tools & Test Equipment



- VIAVI
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- INNO

Fiber Enclosures



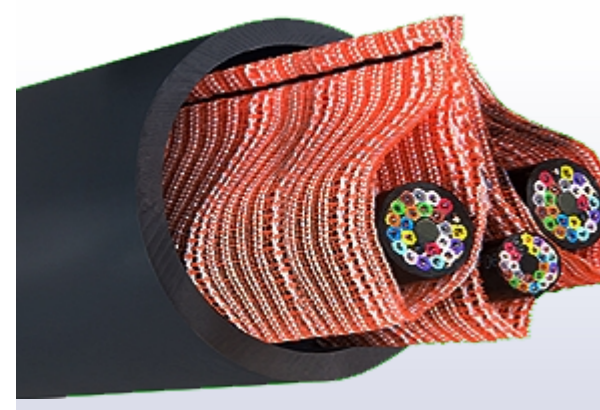
- PLP
- CommScope
- Corning

**PON / GPON
XGSPON**



- Multicom/Netceed
- Adtran
- DZS

**Innerduct
& Conduit**



- Duraline
- Condux
- Endot

**Handholes
Pull Boxes**



- Hubbell/Quazite/Pencell
- Old Castle
- Channell

[Multicom, now Netceed](#), is working with industry partners and network operators to accelerate technology innovation across every type of network. Our online catalogs provide an overview of products for various markets.

[NCTC Portal Login](#)