

# 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.*



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

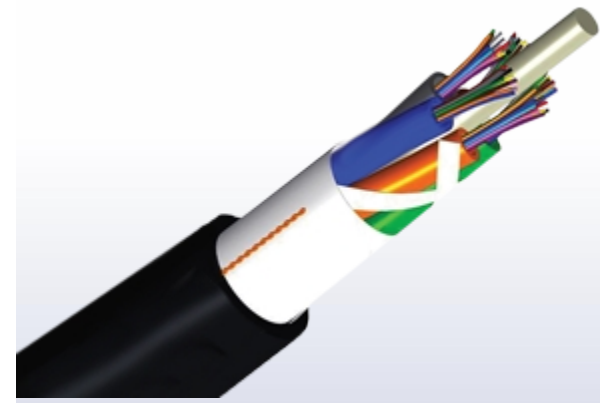
Ethernet Gateway w/2.5GE PortBuilt to extend fiber and multi-gig performance for buffer-free 4K/8K streaming

[Learn more](#)

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

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

Fiber Optic  
Cable



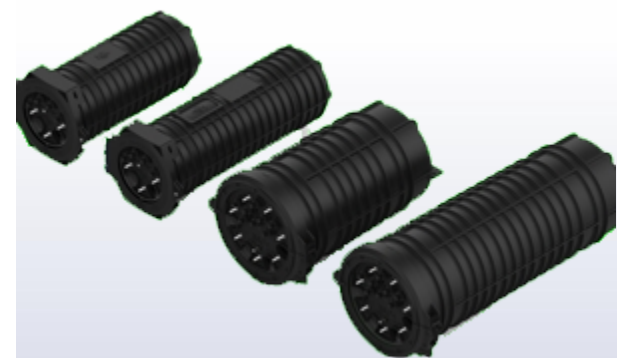
- Corning
- Prysmian
- CommScope

## Tools & Test Equipment



- VIAVI
- EXFO
- INNO

## Fiber Enclosures



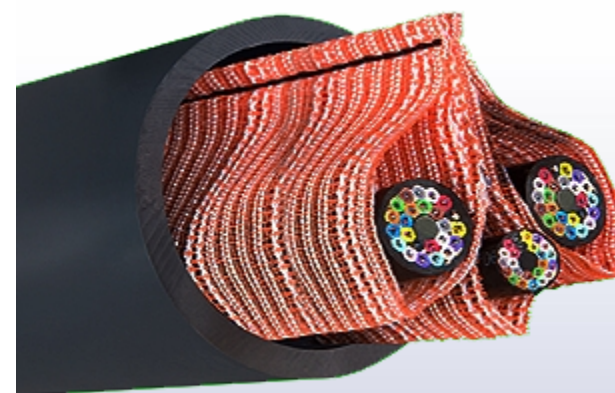
- PLP
- CommScope
- Corning

## 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](#)

# DZS - High Density FTTH Starter Kits for GPON

DZS Kits are no longer available. However, all DZS products included in the kits are available and are currently on our website. Please see our [DZS Products and Solutions](#).

Multicom – Your Full Solutions Provider for FTTH Products & Services is Now Offering High Density FTTH Starter Kits for GPON



The new DZS FTTH Starter Kits include the DZS MXK-F219 OLT Chassis in an aggregation platform that supports fiber-based triple play services in a compact chassis that is 86 percent smaller than previous MXK-F models. The MXK-F219 is designed to support up to 160 Gigabits per second (Gbps) of network interface capacity.

Together with DZS, Multicom has come up with an FTTH Solution that fits nearly every network environment and budget.

## There are 4 Kit Options:

- **KIT 1:** Base Package includes 10 ONTs
- **KIT 2:** Base Package includes 10 ONTs + **WiFi**
- **KIT 3:** Base Package includes 10 ONTs + **RF**
- **KIT 4:** Base Package includes 10 ONTs + **WiFi & RF**

Base Package – All Kits Include:	KIT 1	KIT 2	KIT 3	KIT 4
<a href="#">MXK-CHASSIS-F219-AC-NA</a>	✓	✓	✓	✓
MXK-LC-GP16 ROHS	✓	✓	✓	✓
MXK-MC-AETG2-TOP ROHS	✓	✓	✓	✓
MXK-GPON-SFP-B+-RSSI GPON SFP B+	✓	✓	✓	✓
SFP-FE-GE-TP-RJ45 SFP FE/GE	✓	✓	✓	✓
MXK-MC-BLANK	✓	✓	✓	✓
MXK-LC-BLANK	✓	✓	✓	✓
ZMS-VA-5000	✓	✓	✓	✓
SVC-MAINT-ZMSVA-WP-1Y	✓	✓	✓	✓
SVC-MAINT-SLMSMXPON2-WP-1Y	✓	✓	✓	✓
SVC-INSTALL-MISC 4HR REMOTE	✓	✓	✓	✓
SVC-MAINT-SLMSZNID-WP-1Y	✓	✓	✓	✓

## ONTs – Each Kit includes a different ONT

<a href="#">ZNID-GPON-2424A-NA</a>	ONT – 4 GigE and 2 POTS	✓			
<a href="#">ZNID-GPON-2726-A1-NA</a>	ONT – 4 GigE, 2 POTS – <b>Plus WiFi</b>		✓		
<a href="#">ZNID-GPON-2425-NA</a>	ONT – 4 GigE, 2 POTS – <b>Plus RF</b>			✓	
ZNID-GPON-2727A1-NA	ONT – 4 GigE, 2 POTS – <b>Plus WiFi &amp; RF</b>				✓

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# DZS - Starter Kits for GPON, XGSPON & Active Ethernet

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Multicom & DZS – Are Now Offering Starter Kits for GPON, XGSPON & Active Ethernet

All kits come complete with: **All of the Components Needed for your GPON, XGSPON or Active Ethernet System, 4 Hour Remote Turn up package by DZS Engineering and Bronze Plus Warranty.**

- [KIT 1 – MXK F108 GPON](#) – 1RU 8 Port GPON OLT plus 5 ONTs & SFPs
- [KIT 2 – MXK F219 GPON](#) – 2 Slot Chassis – Holds 16 Port GPON Line Card, 5 ONTs & SFPs
- [KIT 3 – MXK F219 10GIG XGSPON](#) – 2 Slot Chassis – Holds 16 Port 10Gig XGSPON Line Card, 5 ONTs, SFPs
- [KIT 4 – ACTIVE ETHERNET](#) – 1RU 24 Port Active Ethernet, OLT, 5 ONTs, SFPs

DZS KIT	KIT 1 – GPON	KIT 2 – GPON	KIT 3 – XGSPON	KIT 4 – ACTIVE ETHERNET
CHASSIS		<a href="#">MXK-CHASSIS-F219</a>	<a href="#">MXK-CHASSIS-F219</a>	
OLT	<a href="#">MXK-F108-SDC</a>			
SWITCH				<a href="#">MX-180-GE-LT</a>
ONT-IN	<b>Quantity: 5</b> <a href="#">ZNID-GPON-2424A1-NA</a>	<b>Quantity: 5</b> <a href="#">ZNID-GPON-2424A1-NA</a>	<b>Quantity: 5</b> <a href="#">HX-XGS-5302-NA</a>	<b>Quantity: 5</b> <a href="#">ZNID-GE-2424A1-NA</a>
SFP-1	<a href="#">MXK-GPONSFP-B+-RSSI</a>	<a href="#">MXK-GPONSFP-B+-RSSI</a>	XCVR-XGS-XFPOLT-N2-CA	<b>Quantity: 5</b> SFP-GE-BX-1490-SLC
SFP-2	SFP-FE/GE-TPRJ45E	SFP-FE/GE-TPRJ45E	<a href="#">MXK-10GE-SFP+-SR</a>	
CARD – 1		MXK-MC-AETG2-TOP	<b>Quantity: 2</b> MXK-MC-AETG2-TOP	
CARD – 2		MXK-LC-GP16-3	MXK-LCN-GPS16	
4-Hr Remote Turn-up Package	Included	Included	Included	Included
Bronze Plus Warranty	Included	Included	Included	Included



Proudly made in the USA

To learn more about the FTTH Starter Kits, give us a call: 800-423-2594, or [Contact Us](#)

Proudly made in the USA, DZS Fiber Access solutions offer service providers more bandwidth while reducing Total Cost of Ownership and ease of deployment. DZS is a Global Leader in Fiber Access Transformation for Service Providers. Its products and solutions provide carriers multiple options for fiber access including GPON, XGSPON and Active Ethernet Solutions – one of the only CE2.0 certified GPON solutions in the market today.



[Learn more about GPON](#)

[Learn more about Active Ethernet](#)

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# Assembly & Testing

## From Design to Assembly and Shipping Your End-to-End Solution

Multicom's expertise is not only in the design of distribution systems, but also complete headend assembly by compiling the most efficient components for your required specifications.

### Rack and Balancing

- All equipment identified front and rear
- Connecting cables labeled
- Headend balanced to industry standards or custom requirements
- Logical, efficient rack layout
- Burn-in eliminates initial failure and downtime – ensuring long term reliable operation
- All equipment is fully tested before shipment

### Crating and Shipping

- Racks are plastic wrapped, palletized, framed, and covered in a protective shell
- Critical components are fully supported
- Finished crate is equipped with tilt indicators

### Your End-to-End Solution

Our 'In-House' team of professionals have decades of experience in the assembly and construction of your customized system from concept through shipping. Multicom prides itself in providing comprehensive support and guidance from the installation phase, throughout ongoing operations, and later network expansions.





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## Design & Engineering



From CATV Headends and Ethernet Networks, to [Fiber Optics](#) and Digital Signage; Multicom delivers the professionally engineered system you need. With our experienced engineers and state of the art CAD system, we deliver a comprehensive and professional solution for all types of businesses.

Multicom's design and engineering team has earned the respect and trust of system operators and owners throughout the United States, Latin America, and Europe.

### All designs include:

- Headend block diagram
- Rack layout (see below)
- Complete priced bill of materials
- Expert consulting

Complete headend assembly is also available including, racking, balancing, custom crating and shipping for a guaranteed Plug & Play solution.

### From Design to Assembly and Shipping Your End-to-End Solution

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## Integration Services

Multicom offers on site integration services focusing on CATV / Satellite headends and distribution, networking and structured wiring, GPON, Wireless, VoIP and A/V. Our nationwide integration network ensures you have the resources you need anytime, anywhere.

### Integration Services Offered:

#### CATV / Satellite

- Distribution
  - Coax
  - Fiber
- Headend



- Analog
- Digital
- IPTV
- GPON

## IT

- Networking
- Structured Cable
  - Fiber
  - UTP
- Wireless
  - Backhaul
  - Enterprise
  - Site Survey

## Telecom

### VoIP

### Audio / Video

### Digital Signage

### Security

## And More...

If you don't see the service you require listed, feel free to contact us as many of our integrators have specialties not listed above.

## Interactive Integrator Map



[View Now](#)

## Join Our Integrator Network

We are always looking for integrator partners with CATV/Satellite, IT, Wireless and A/V backgrounds. We will provide you qualified projects based on your area of expertise.

[Join Us](#)

## Integrator Locations



## Join Our Integrator Network

We are always looking for integrator partners with CATV/Satellite, IT, Wireless and A/V backgrounds. We will provide you qualified projects based on your area of expertise.

[Join Us](#)

### **Alabama**

Birmingham  
Huntsville  
Mobile  
Montgomery

### **Alaska**

Anchorage

### **Arizona**

Chandler  
Gilbert  
Glendale  
Mesa  
Peoria  
Phoenix  
Scottsdale  
Surprise  
Tempe  
Tucson

### **Arkansas**

Little Rock

### **California**

Anaheim  
Antioch  
Bakersfield  
Berkeley  
Burbank  
Carlsbad  
Chula Vista  
Concord  
Corona  
Costa Mesa

Daly City  
Downey  
El Cajon  
El Monte  
Elk Grove  
Escondido  
Fairfield  
Fontana  
Fremont  
Fresno  
Fullerton  
Garden Grove  
Glendale  
Hayward  
Huntington Beach  
Inglewood  
Irvine  
Lancaster  
Long Beach  
Los Angeles  
Modesto  
Moreno Valley  
Murrieta  
Norwalk  
Oakland  
Oceanside  
Ontario  
Orange  
Oxnard  
Palmdale  
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Pomona  
Rancho Cucamonga  
Rialto  
Richmond  
Riverside  
Roseville  
Sacramento  
Salinas  
San Bernardino  
San Diego  
San Francisco  
San Jose  
San Mateo  
Santa Ana  
Santa Clara  
Santa Clarita  
Santa Maria  
Santa Rosa  
Simi Valley  
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Boulder  
Centennial  
Colorado Springs  
Denver  
Fort Collins  
Lakewood  
Pueblo  
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Westminster

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New Haven  
Stamford  
Waterbury

## **District of Columbia**

Washington

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Coral Springs  
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Hialeah  
Hollywood  
Jacksonville  
Lakeland  
Miami  
Miami Gardens  
Miramar  
Orlando  
Palm Bay  
Pembroke Pines  
Pompano Beach  
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Tallahassee  
Tampa  
West Palm Beach

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Columbus  
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Honolulu

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Boise

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Elgin

Joliet

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Rockford

Springfield

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Indianapolis

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Boston

Cambridge

Lowell

Springfield

Worcester



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North Las Vegas  
Reno

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Raleigh  
Wilmington  
Winston–Salem

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Cleveland  
Columbus  
Dayton  
Toledo

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Oklahoma City  
Tulsa

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Philadelphia  
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Columbia

North Charleston

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Madison  
Milwaukee

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# Solutions

## Markets

Healthcare, Education, Hospitality, Traffic & DOT

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## Technologies

HFC, GPON, RFoG

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# Markets

## Healthcare

Hospitals, Nursing Homes, Assisted Living, Clinics

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## Education

Universities, Community Colleges, K-12

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## Hospitality

Hotels, Motels, Entertainment Resorts, B&Bs

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## Traffic & DOT

Everything Needed in the Intersection, and More

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# Technologies

## Multicom's GPON Solution



Multicom Stocks the products needed to successfully implement HDTV, High Speed Internet, Phone Service and WiFi Connectivity over a GPON Network. Multicom makes it easy...

[Learn More](#)

## Multicom's Active Ethernet Solution



1 Gbps or 10 Gbps Point-to-Point dedicated fiber access technology for delivering Internet services – Video, Data and Voice – to residential and business subscribers with no shared bandwidth



[Learn More](#)

#### Multicom's RFoG Solution

# RFoG



Deliver up/downstream voice, video, and data services over a fiber-based network residing alongside an existing HFC network – with minimal changes to headend and field equipment

[Learn More](#)

#### Multicom's HFC Solution

# HFC



Add to, manage and expand your Hybrid Fiber-Coaxial cable network to get more value from existing bandwidth and rapidly deploy next-generation cable services. Let us show you how...

[Learn More](#)

## GPON (Gigabit Passive Optical Network)

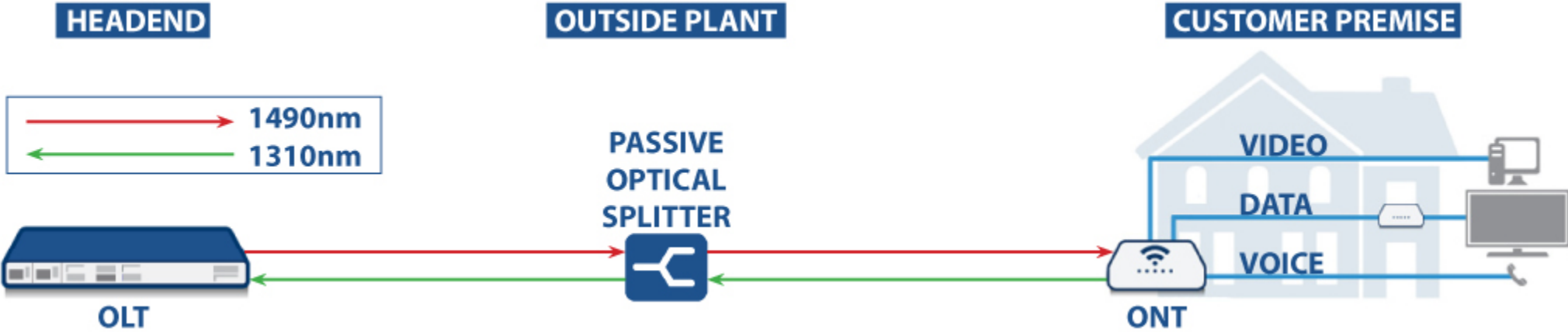


One way of providing fiber to the home is through a Gigabit Passive Optical Network, or GPON.

GPON is a point-to-multipoint access network. Its main characteristic is the use of passive splitters in the fiber distribution network, enabling one single feeding fiber from the provider to serve multiple homes and small businesses.

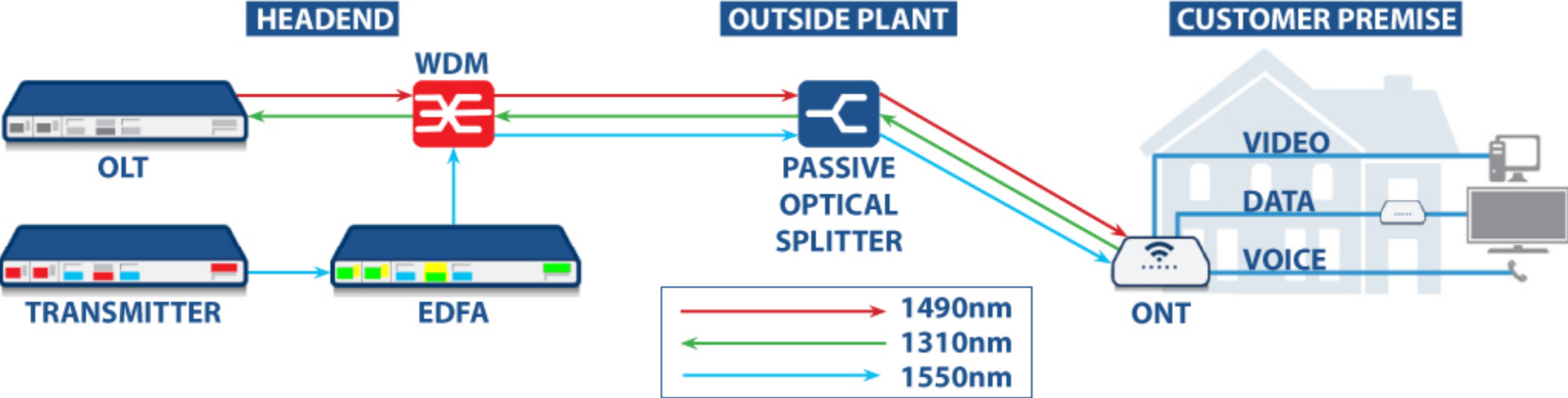
GPON has a downstream capacity of 2.488 Gb/s and an upstream capacity of 1.244 Gbp/s that is shared among users. Encryption is used to keep each user's data secured and private from other users. Although there are other technologies that could provide fiber to the home, passive optical networks (PONs) like GPON are generally considered the strongest candidate for widespread deployments.

Typical GPON Network



GPON is specified to be a single or dual fiber system, but almost all GPON systems are single fiber like virtually all popular FTTH technologies. There is little reason to use dual fibers, although this option is indeed allowed in the standard. [click the product images above]

Typical GPON Network with RF Overlay



The RF overlay incorporates standard and high-definition video into the fiber network using the 1550nm transmitter and EDFA. For cost savings, this topology is often used over the GPON IP solution. [click the product images above]

Multicom Stocks a Wide Range of [DZS](#) OLTs, and Indoor and Outdoor ONTs



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).

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. Click the Links to Learn More...

[GPON Network Components](#)

[Learn More about GPON Migration  
MXK-F Series of GPON OLTs](#)

[ZNID Series of GPON ONTs](#)

Looking for an Easy and Affordable way to deploy a FTTH GPON Network? [Get the Kit!](#)

DZS is a global leader in delivering carrier-grade network and customer access solutions for high-speed data, voice, video, and wireless services over FTTP (Fiber-to-the-Premise) networks, with more than 5 million ONTs deployed worldwide.

[Learn More](#)



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.

[MXK-F Series of GPON OLTs](#)

## **DZS's ZNID Series of 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 GPON ONTs](#)

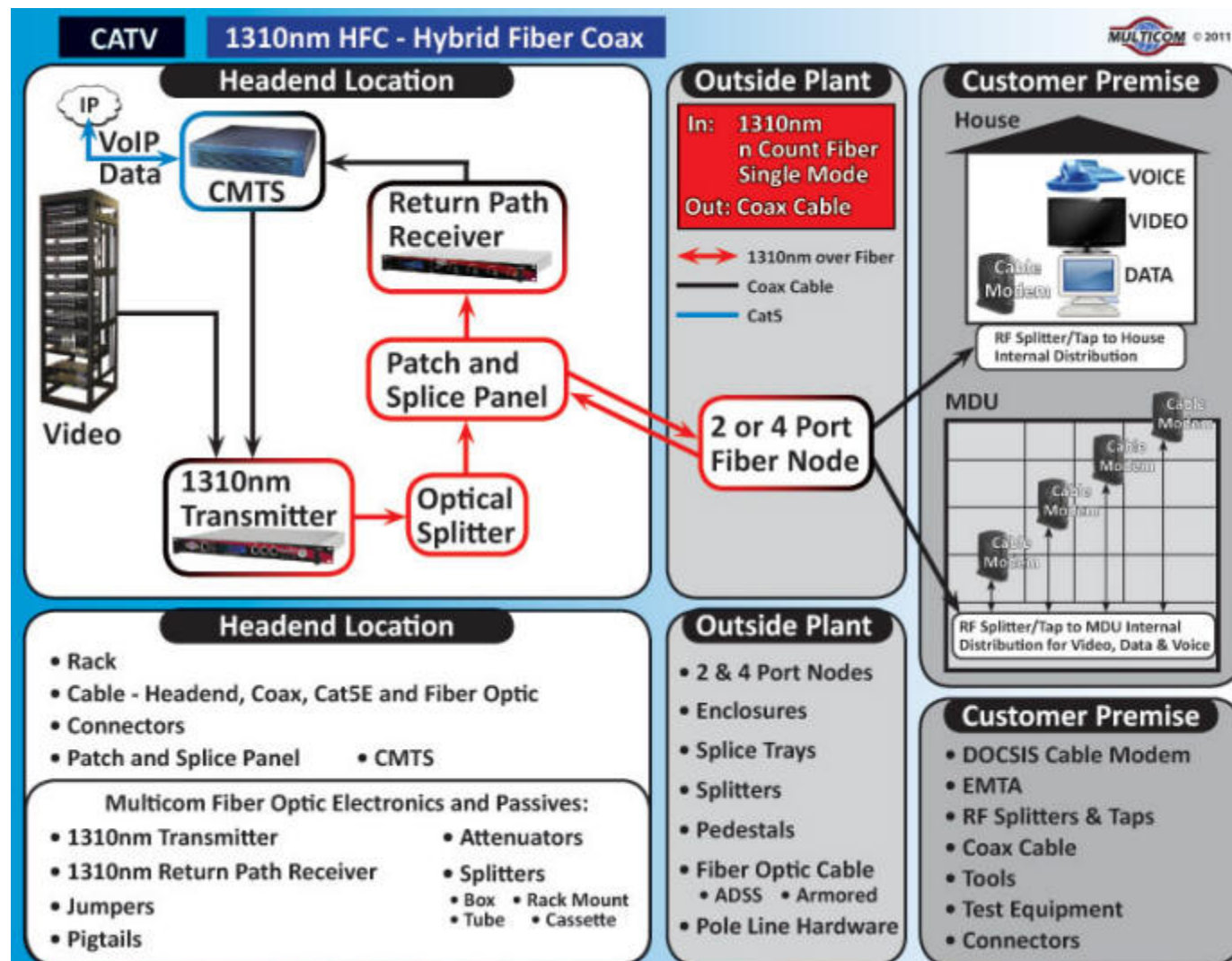
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# HFC (Hybrid Fiber-Coaxial)

HFC is a telecommunications industry term for a broadband network which combines optical fiber and [coaxial cable](#). It has been commonly employed globally by cable TV operators since the early 1990s.

Multicom Stocks a Wide Range of products for HFC: [Fiber Optic Transmitters](#), [EDFA](#), [Return Path Receivers](#), [WDM](#), [Optical Splitters](#), [Nodes](#), and [more](#).

Below is a typical HFC Network. Click the section to view example products.



The fiber optic network extends from the cable operator's headend out to a neighborhood's hubsite, and finally to a [fiber optic node](#) which serves anywhere from 25 to 2000 homes. A headend will usually have [satellite dishes](#) for reception of distant video signals as well as IP aggregation routers. Some headends also house telephony equipment for providing telecommunications services to the community. The headend will receive the video signal and add to it the Public, Educational and/or Governmental channels and encode, modulate and upconvert onto RF carriers, combined onto a single electrical signal and inserted into a [broadband optical transmitter](#). This [optical transmitter](#) converts the electrical signal to a downstream optically modulated signal that is sent to the nodes. [Fiber optic cables](#) connect the headend to [optical nodes](#) in a point-to-point or star topology, or in some cases, in a protected ring topology.

A [fiber optic node](#) has a broadband optical receiver which converts the downstream optically modulated signal coming from the headend to an electrical signal going to the homes. Today, the downstream signal is a radio frequency modulated signal that typically begins at 50MHz and ranges from 550MHz to 1000MHz on the upper end. The [fiber optic node](#) also contains a reverse/return path transmitter that sends communication from the home back to the headend. This reverse signal is a modulated RF frequency ranging from 5 to 42MHz.

The optical portion of the network provides a large amount of flexibility. If there are not many fiber optic cables to the node, [wavelength division multiplexing](#) can be utilized to combine multiple optical signals onto the same fiber. Optical filters are used to combine and split optical wavelengths onto the single fiber. For



example, the downstream signal could be on a wavelength at 1550nm and the return signal could be on a wavelength at 1310nm.

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## New Multicom Products



**MULTICOM**

At Multicom Our Goal is Simple:  
To Increase Our Product Line  
with  
High Quality Products  
at  
The Best Prices  
that  
Keeps the Industry Wondering:  
**How Do They Do It?**

### New Multicom Products:

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## RFoG (Radio Frequency over Glass)

RFoG is a type of passive optical networking that proposes to transport RF signals that are now transported over copper (principally over hybrid fiber and coax cable), over a Passive Optical Network.

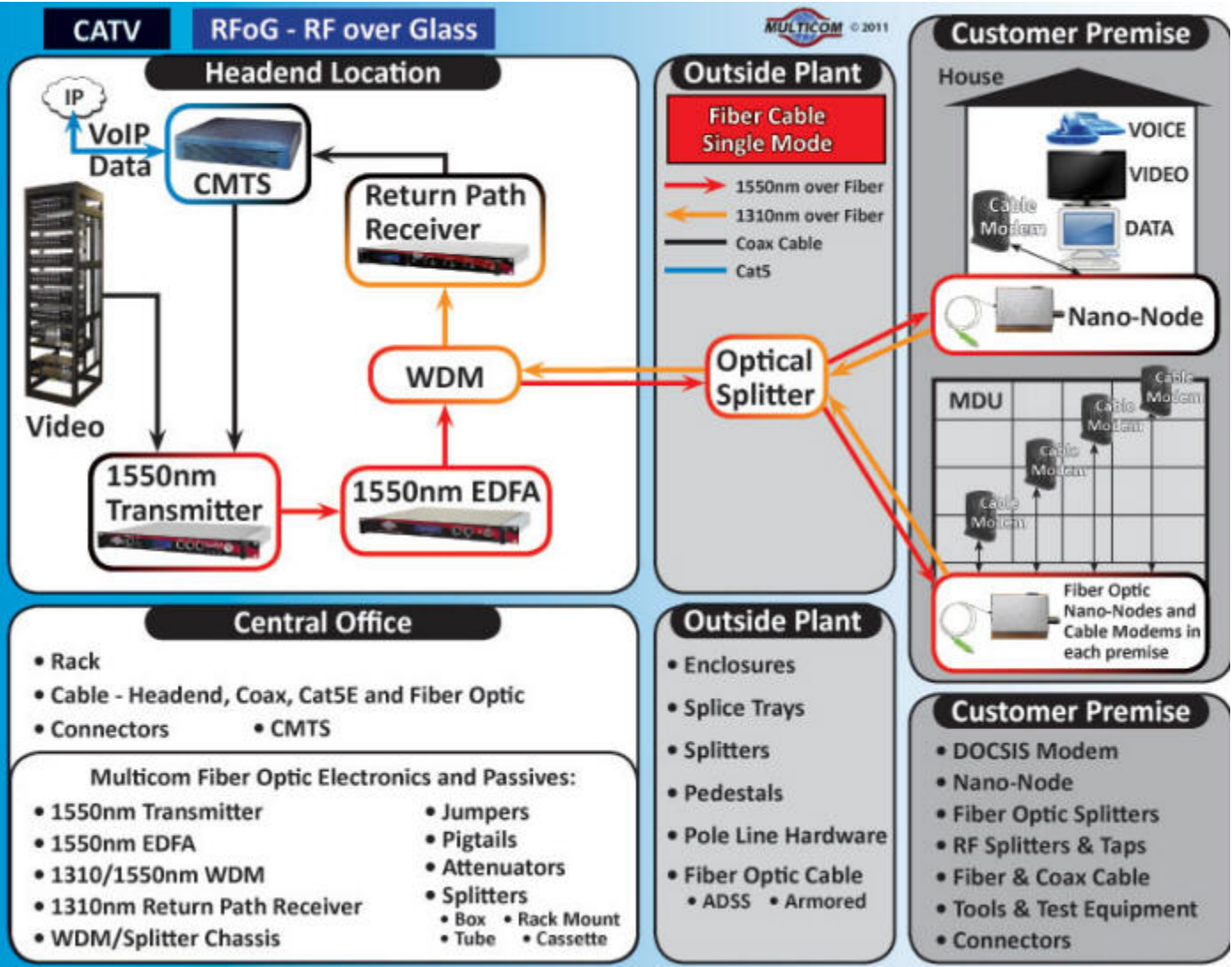
In the forward direction RFoG is either a stand alone Point to Multi-Point system or an optical overlay for existing Passive Optical Network (PON) such as [Gigabyte Passive Optical Network \(GPON\)](#). Reverse RF support is provided by transporting the upstream or return path into on a separate return path or wavelength.

RFoG offers backwards compatibility with existing RF modulation technology, as a result the existing equipment located at the headend and customer premise can still be utilized. RFoG offers a means to support RF technologies in locations where only fiber is available, or where copper is not permitted or feasible. This technology is targeted towards Cable TV operators and their existing HFC networks.

Multicom Stocks a Wide Range of products for RFoG: [Fiber Optic Transmitters](#), [EDFA](#), [Return Path Receivers](#), [WDM](#), Optical [Splitters](#), [Nodes](#), and [more](#).

Below is a typical RFoG Network.

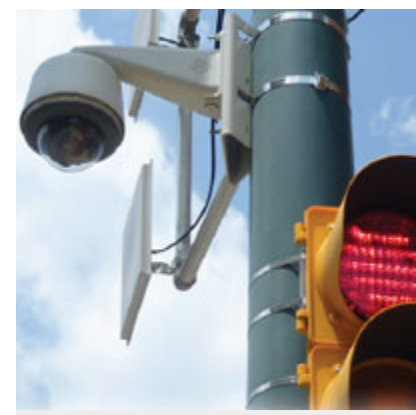




## Traffic and DOT Solutions



Areas Served



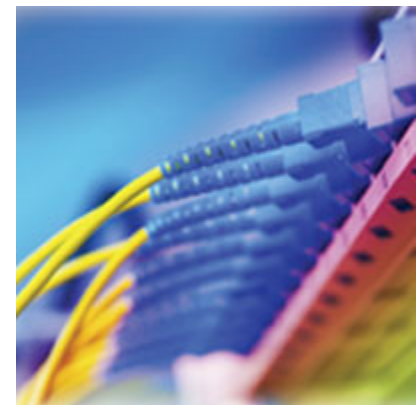
- Traffic Control Networks
- ITS

#### Solutions Provided



- Video
- Wireless
- Data

#### Technology Available



- Cabling: [Camera](#), [Fiber Optic](#), [Data](#) & [More](#)
- [Ethernet Switches](#) / [Routers](#)
- [ITE Compliant Traffic Signal Products](#)
- [Wireless Connectivity](#)
- [Traffic Hardware](#)

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.

## Training

## Webinars



Multicom provides a large variety of Webinars for Cable Operators from Commercial Satellite Solutions to Pro:Idiom® Hospitality Solutions

[Learn More](#)

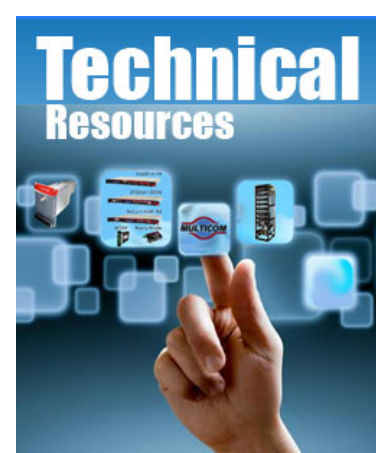
## Your Place or Ours



Multicom's Certified Fiber to the Home Professional (CFHP) as well as System Engineers often do trainings – both in-house or at your premises

[Learn More](#)

## Library of Knowledge



Everything You Need to Know – Resource Guides from Data, Video and Fiber Optics, to our exclusive and odd-ball Did You Knows

[Learn More](#)

# Seminars

KNOW YOUR  
NETWORKS:  
HFC FTTH  
GPON RFoG



Multicom's Certified Fiber to the Home Professional (CFHP) as well as System Engineers often do trainings – both in-house or at your premises

These are no seminars scheduled at this time. Please check back later.

Feel free to browse our available on-demand webinars [here](#).

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