COMTREND

OpenPON

The Better Choice for Affordable, Scalable Fiber Networks—Here’s Why It Matters for Service Providers

What is OpenPON?

An Open-Architecture Approach for Last-Mile Broadband Access

- Alternative to Closed, End-to-End Access Solutions
- Enables Control of the Network
- Allows More Options, Faster Implementation, Lower CapEx/OpEx

Companies Embracing Open Broadband

CIENA

CISCO

COMTREND

HARMONIC

TECHNETIX

RADISYS

+ More

COMTREND

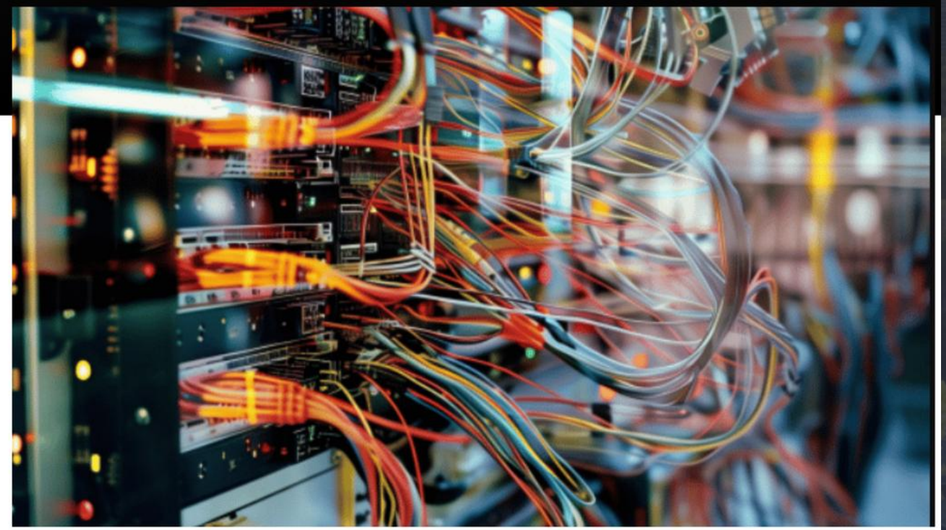
The Open Architecture Trend is Re-Energizing the Fiber Broadband Market

BROADBAND

Cisco breaks down OLT chassis with new pluggable

By **Masha Abarinova** · Mar 20, 2024 12:30pm

Cisco | passive optical networking | distributed access architecture (DAA) | fiber



Not only can Cisco's Routed PON break down the OLT chassis, it can collapse PON and BNG functions into a single platform, said Heynen. (Art by Midjourney for Fierce)

COMTREND

The Open Architecture Trend is Re-Energizing the Fiber Broadband Market

ciena Solutions Insights Company Contact

About > Press Release

Ciena Brings Innovative Open Broadband Solutions and Expertise to Network X 2023

HANOVER, Md., U.S.A — October 17, 2023

Demos highlight Ciena's open, modular, and scalable approach with coherent aggregation and metro routers

At Network X 2023, taking place October 24-26 at Porte de Versailles in Paris, Ciena (NYSE: CIEN) will showcase how open standards in optical networks can lead to greater network efficiencies. Ciena's experts will be available to discuss how its broadband solutions help to bridge the digital divide, drive economic growth, and deliver a better user experience.

Visiting Ciena's booth (#E4), operators will learn how Ciena innovations and expertise can:

- Protect network investments by leveraging optimal XGS-PON port density and power consumption for a seamless evolution to 25GS-PON with Ciena's Universal Aggregation solution.
- Monetize network architectures by seamlessly providing mobile xHaul and enterprise services with a converged network infrastructure.
- Efficiently manage broadband services via Ciena's virtual Broadband Network Gateway (vBNG).
- Drive a simpler, more scalable, and sustainable metro network using Ciena's coherent aggregation and metro routers.

COMTREND

The Open Architecture Trend is Re-Energizing the Fiber Broadband Market

Network openness is another vital aspect to consider. Creating a best-in-breed, future-proof network based on closed and proprietary technologies is impossible.

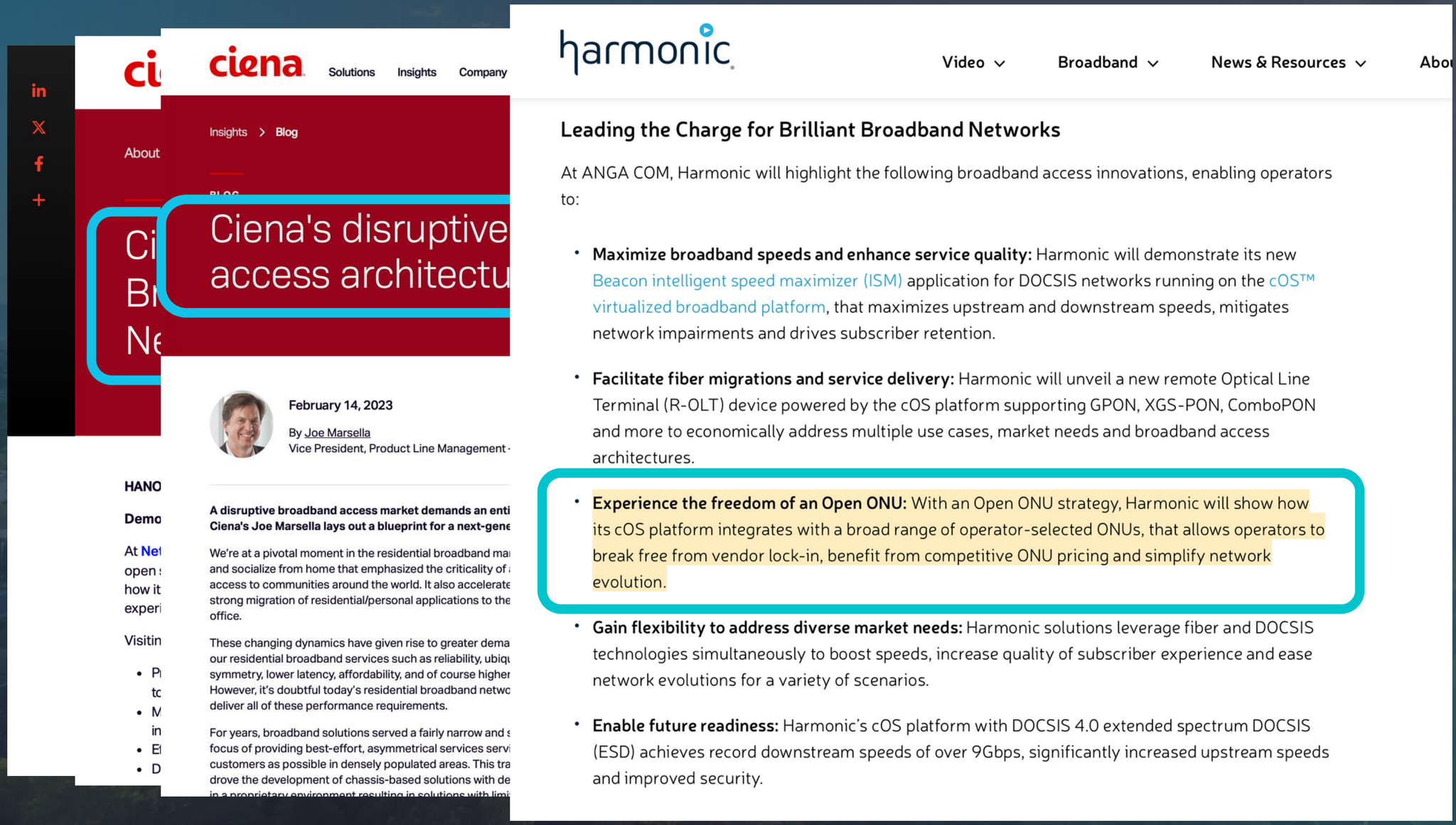
COMTREND

The Open Architecture Trend is Re-Energizing the Fiber Broadband Market

COMTREND

The Open Architecture Trend is Re-Energizing the Fiber Broadband Market

The Open Architecture Trend is Re-Energizing the Fiber Broadband Market



ciena Solutions Insights Company

Insights > Blog

About

Ciena's disruptive access architectu

February 14, 2023

By Joe Marsella
Vice President, Product Line Management

A disruptive broadband access market demands an enti
Ciena's Joe Marsella lays out a blueprint for a next-gene

We're at a pivotal moment in the residential broadband ma
and socialize from home that emphasized the criticality of
access to communities around the world. It also accelerate
strong migration of residential/personal applications to the
office.

These changing dynamics have given rise to greater dema
our residential broadband services such as reliability, ubiqu
symmetry, lower latency, affordability, and of course higher
However, it's doubtful today's residential broadband netwo
deliver all of these performance requirements.

For years, broadband solutions served a fairly narrow and
focus of providing best-effort, asymmetrical services servi
customers as possible in densely populated areas. This tra
drove the development of chassis-based solutions with de

harmonic

Video Broadband News & Resources Abo

Leading the Charge for Brilliant Broadband Networks

At ANGA COM, Harmonic will highlight the following broadband access innovations, enabling operators to:

- **Maximize broadband speeds and enhance service quality:** Harmonic will demonstrate its new Beacon intelligent speed maximizer (ISM) application for DOCSIS networks running on the cOS™ virtualized broadband platform, that maximizes upstream and downstream speeds, mitigates network impairments and drives subscriber retention.
- **Facilitate fiber migrations and service delivery:** Harmonic will unveil a new remote Optical Line Terminal (R-OLT) device powered by the cOS platform supporting GPON, XGS-PON, ComboPON and more to economically address multiple use cases, market needs and broadband access architectures.
- **Experience the freedom of an Open ONU:** With an Open ONU strategy, Harmonic will show how its cOS platform integrates with a broad range of operator-selected ONUs, that allows operators to break free from vendor lock-in, benefit from competitive ONU pricing and simplify network evolution.
- **Gain flexibility to address diverse market needs:** Harmonic solutions leverage fiber and DOCSIS technologies simultaneously to boost speeds, increase quality of subscriber experience and ease network evolutions for a variety of scenarios.
- **Enable future readiness:** Harmonic's cOS platform with DOCSIS 4.0 extended spectrum DOCSIS (ESD) achieves record downstream speeds of over 9Gbps, significantly increased upstream speeds and improved security.

COMTREND

OpenPON Benefits

Key Advantages of Adopting an OpenPON Approach

FREEDOM

Gain Independence from Single Vendor Constraints

FLEXIBILITY

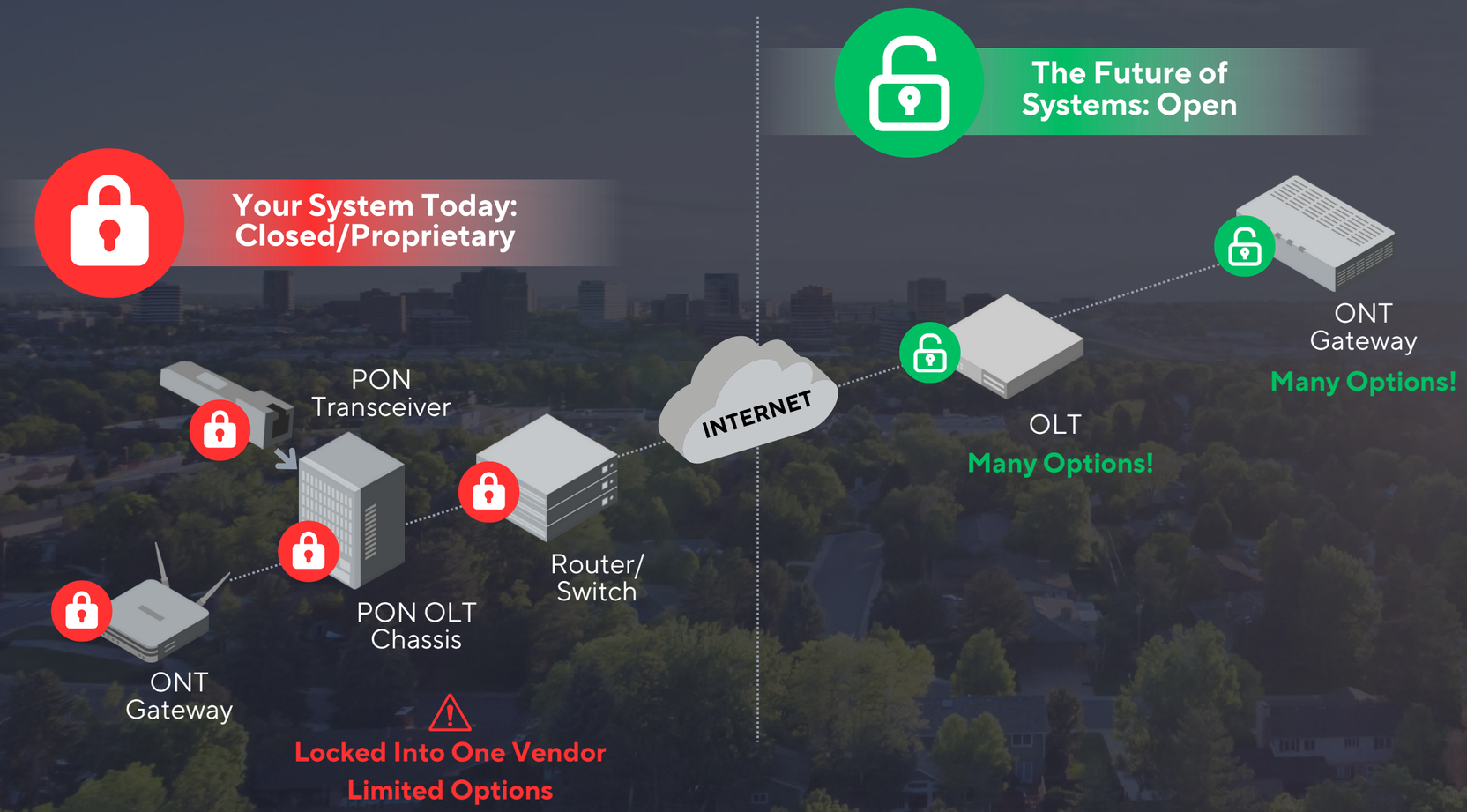
Customize Your Network with Best-in-Class Components and Vendors

COST SAVINGS

Access Competitive Pricing through an Open Market Approach

COMTREND

Independence from Single Vendor Constraints



CLOSED SYSTEMS CAN LEAVE YOU

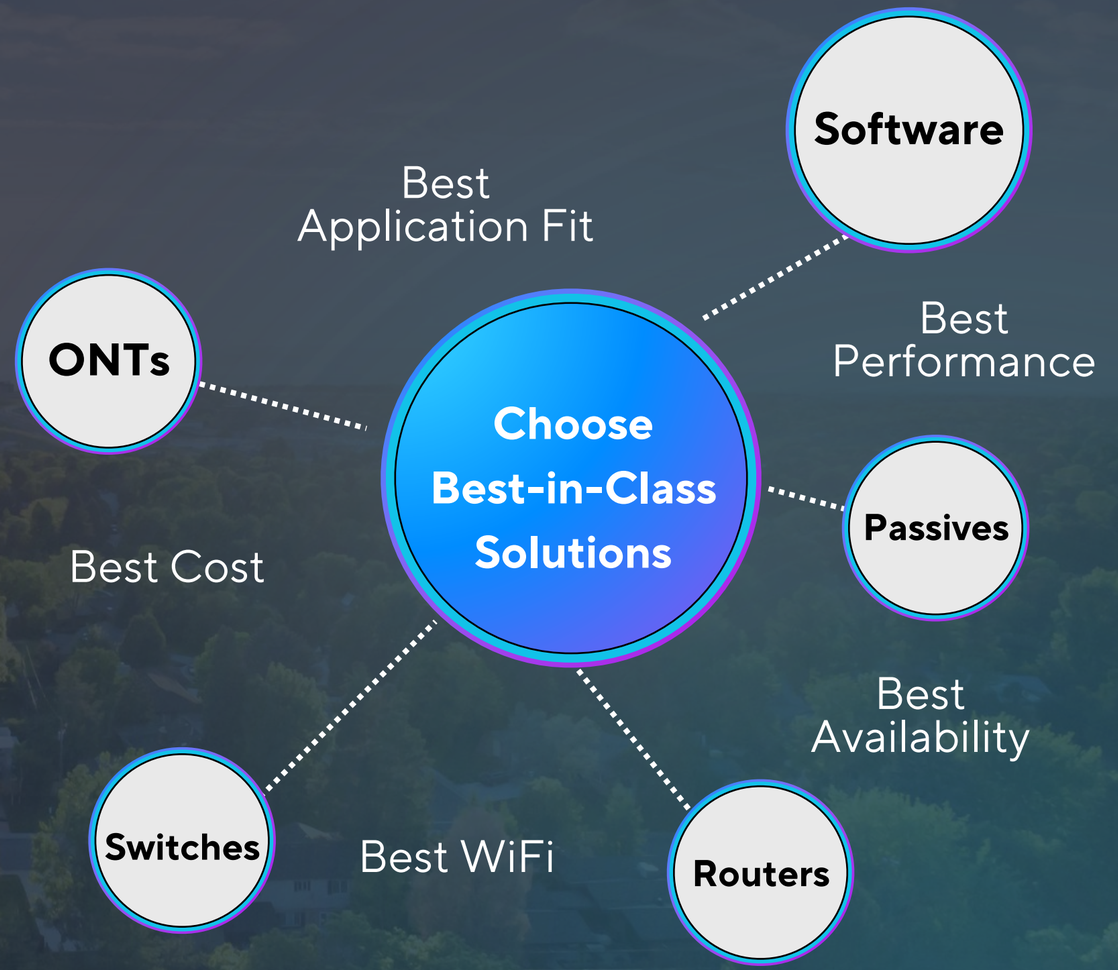
- Vulnerable to long lead times and unpredictable availability.
- Subject to mandatory price increases and rising-subscription fees.
- Limited to a single vendor's offerings.

COMTREND

Increased Flexibility and Best Fit

Choose components tailored to your network needs.

- Select Best-in-Class Solutions
- Support of Legacy Equipment/Investment
- Select Solutions that Best Fit the Requirements.



COMTREND

Cost Savings

Based on the Article:

Proprietary ONTs vs. Open ONTs

24% Savings

on ONT CapEx Costs

10,000 Subscribers
would be an additional
$250,000

25,000 Subscribers
would be an additional
$625,000

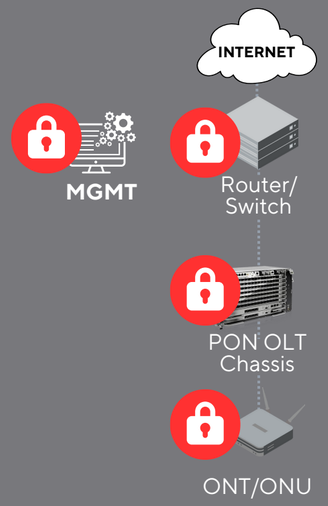
1,000 Subscribers
would be an additional
$25,000

"The following table illustrates a generalized example of how an operator could spend roughly an additional $2.5 million for a 100,000-subscriber deployment using proprietary ONUs." Source: Lightwave Online, Navigating the open ONU landscape: Empowering fiber operators , April 2024

COMTREND

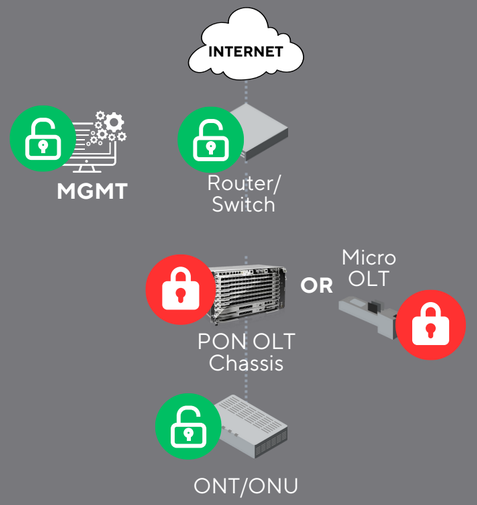
Exploring OpenPON:
Understanding the Spectrum of Openness

Closed Systems



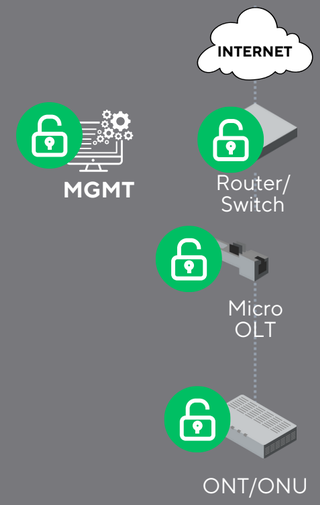
The entire system is closed.

Hybrid Open Systems



Some components of the system are closed and some are open.

Open Systems



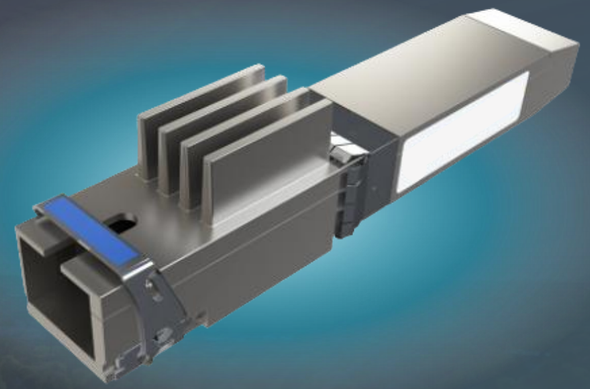
The entire system is open.

OpenPON

COMTREND

An OpenPON Solution: Micro OLT

- **Unique Micro OLT based on TiBit technology launches and maintains new broadband services.**
- Adopted by AT&T, Charter, Liberty Global, and more.
- Ideal for implementing and operating fiber-based services **on a limited budget.**

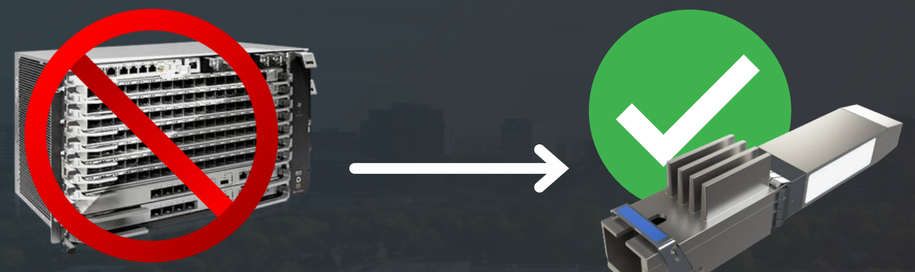


Customers That Have Chosen OpenPON

AT&T | LIBERTY GLOBAL | Charter Spectrum

COMTREND

Closed vs. Open Architectures



Traditional
PON Chassis

OpenPON
Micro OLT

Benefits of a Non-Proprietary OLTs

Reduced Footprint
60% Less Space / 40% Energy Saving
Highest Density in the Market

Increased Flexibility
Easy to upgrade services or switch services to a different community

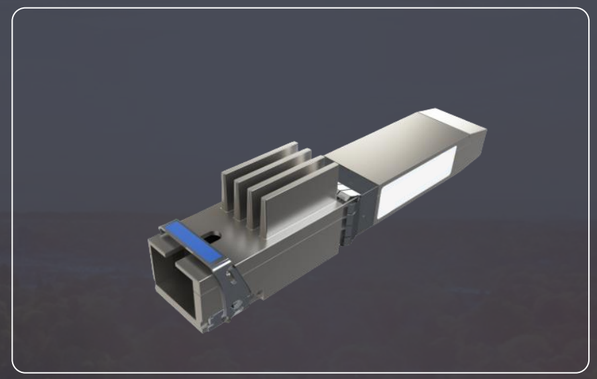
Improved Scalability
Start with one, and grow as needed!

COMTREND

OpenPON Solution: Fonex

MCMS

MicroClimate
Management System



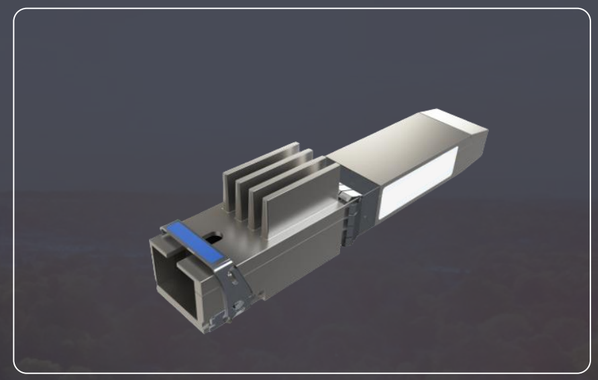
Micro OLT

COMTREND

OpenPON Solution: Ciena

Navigator NCS

Network Control Suite



Micro OLT

COMTREND

Discover a Better Option

Greenfield Deployments

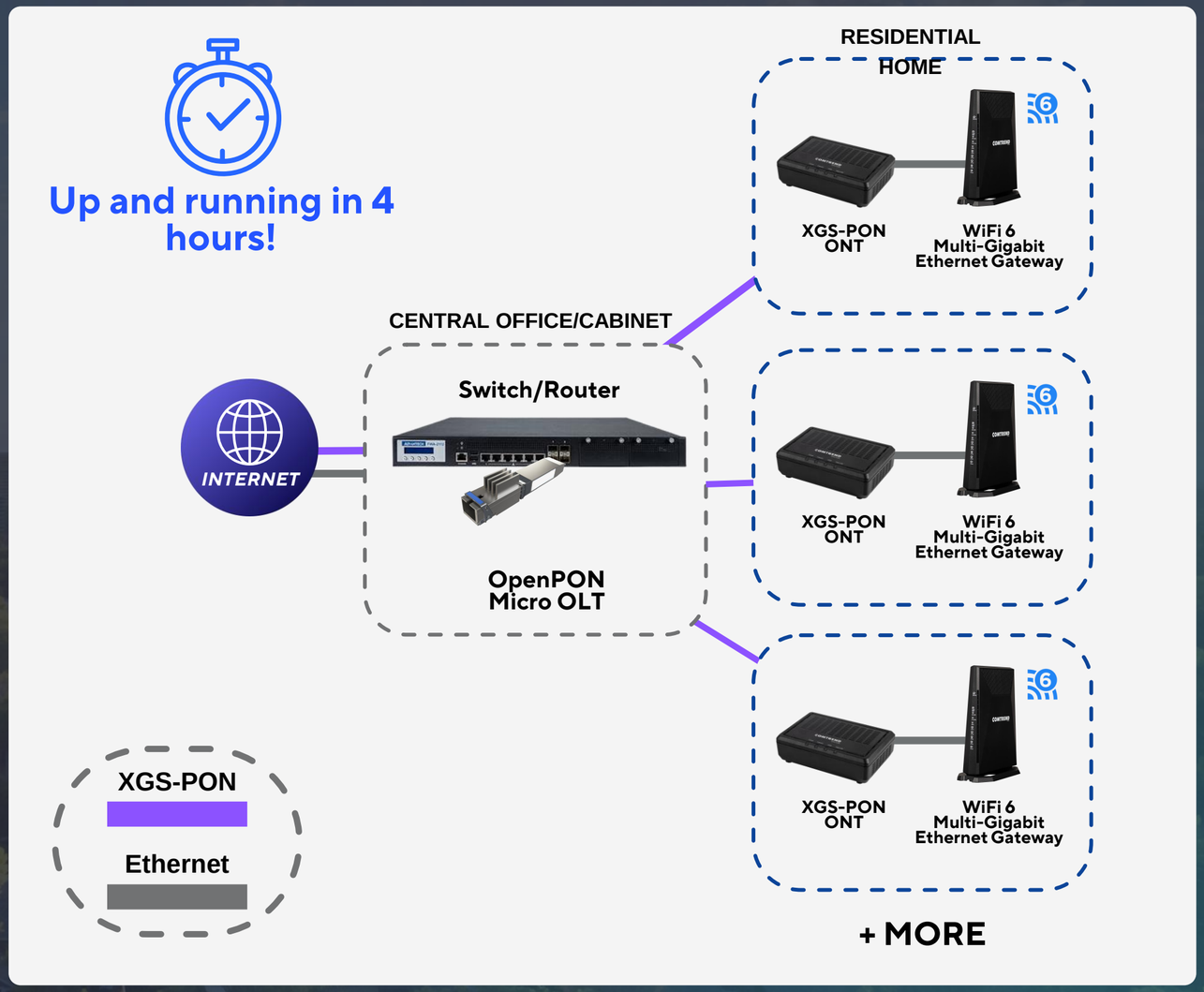
xDSL to Fiber Migration

New Build Out

Acquisition/New Customer Region

New Service Provider

Deployments are Simple and Easy



COMTREND

Adding to What You Have

Brownfield Deployments

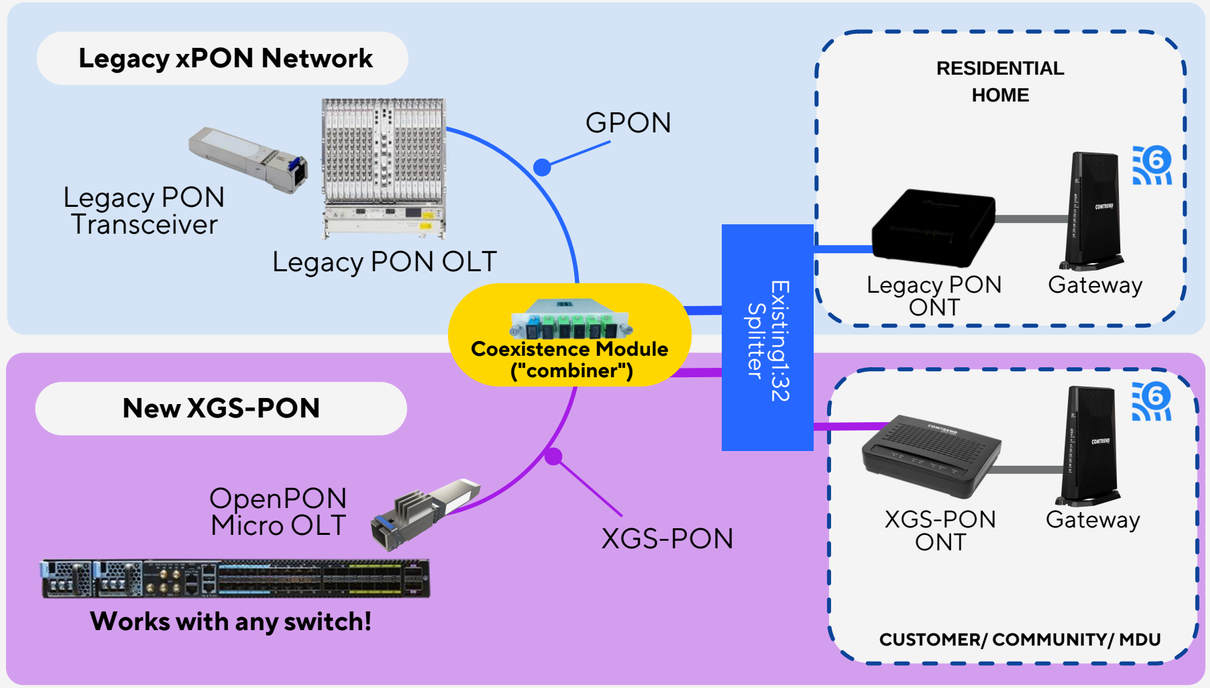
Cap and Grow

Separate by Applications
(e.g. apartments, retirement homes, etc.)

Migration xPON to XGS-PON

XGS-PON and Legacy PON Coexistence

Can be setup easily, quickly, and at low cost **in parallel to your primary active residential broadband services.**



CASE SCENARIO

RETIREMENT COMPLEX

Challenge:

- **Previous GPON system** was not working correctly and **complaints from residents were frequent** (e.g. telephone was not working, TV on/off).
- Needed an **alternate option where down time would be minimal.**

OPENPON RESULTS

LESS THAN 2 HOURS

2 Hour
Installation

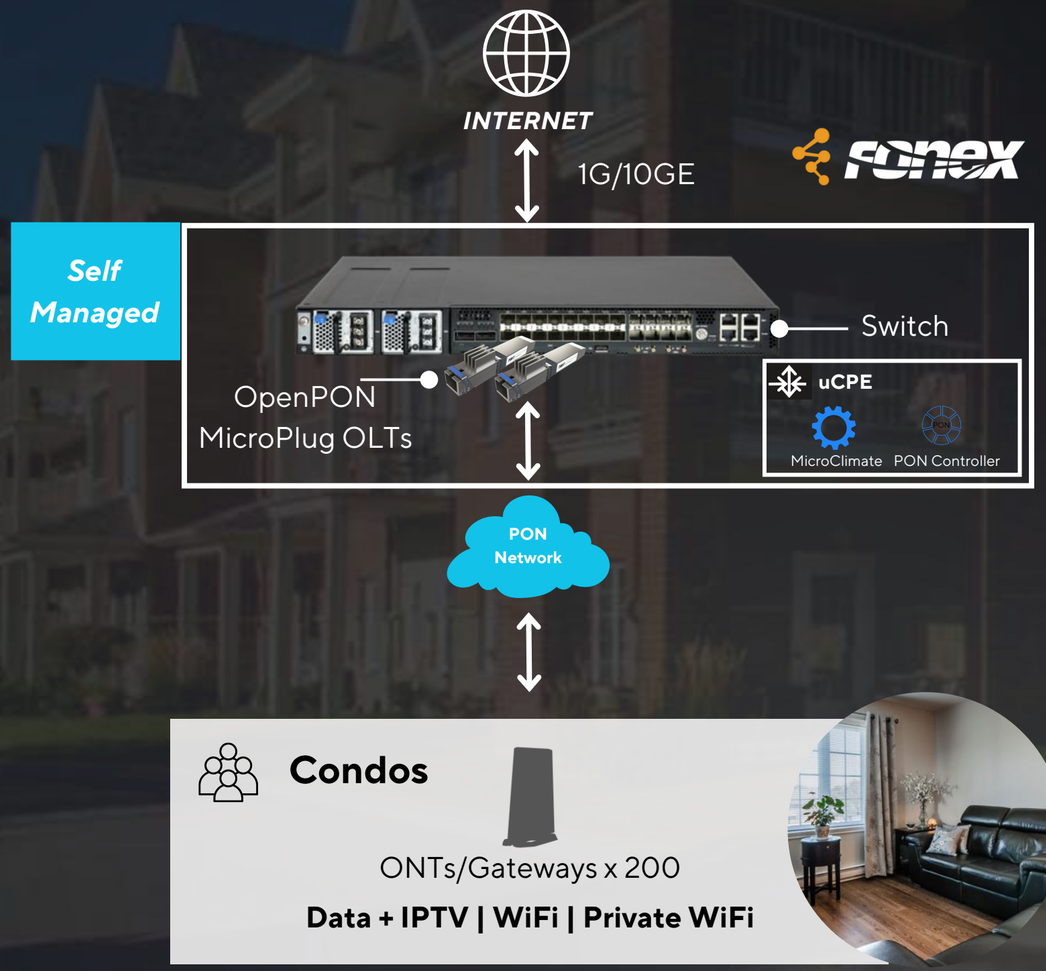
ZERO SERVICE CALLS

ZERO Service Calls
in 1.5 Years of Operation

LE DOMAINE Saint-Rémi

Retirement Complex

Up to 200 Condos / 2 OLTs



CASE SCENARIO

PREMIER EQUESTRIAN CENTER

70% Cost Savings

Competing solutions were cost-prohibitive, requiring $104K for 60 endpoints plus an $11K annual licensing fee.

Rapid Deployment Turnaround

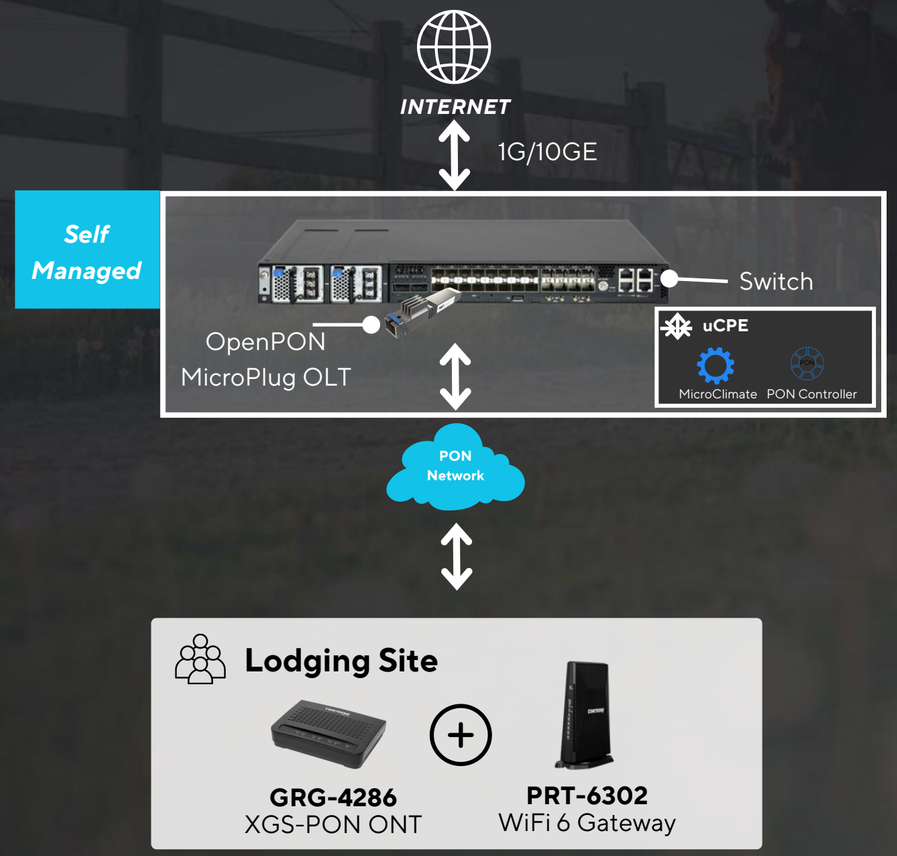
Deployed and operational within four weeks from the initial request.

Superior Wireless Coverage & Speeds

Guests enjoy premium connectivity.

Seamless High-Speed Connectivity for Guests

Up to 60 Lodging Sites | 1 OLT | 60 ONTs | 60 Gateways



COMTREND

COMTREND

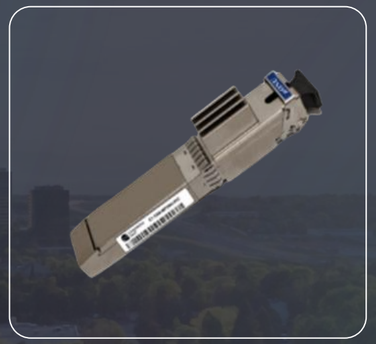
OpenPON Solution: Harmonic

cOS

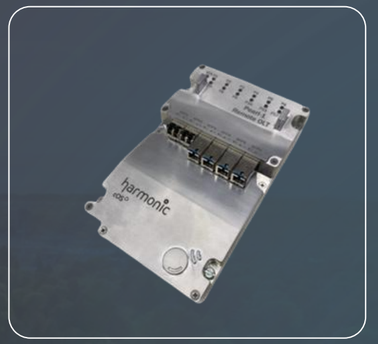
virtualized core
software platform

+

Multiple Form Factors



Fin OLT

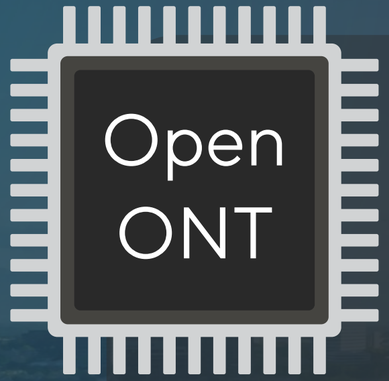


Pearl R-OLT

Pier OLT Shelf

- Pier/Pearl - Any PON Solution 10G EPON, GPON, XGS, Combo(XGS/GPON)
- Deploys any mix of OLT shelves, nodes, and pluggable devices
- Unified management system with single interface (DOCSIS + PON)

Harmonic's Open ONT



Open ONU/ONT Advantages

- Bring Your Own ONU
- Select Best in Breed
- Avoid CPE Vendor Lock
- Get Competitive Pricing

COMTREND

What are You Paying to Deploy Broadband?

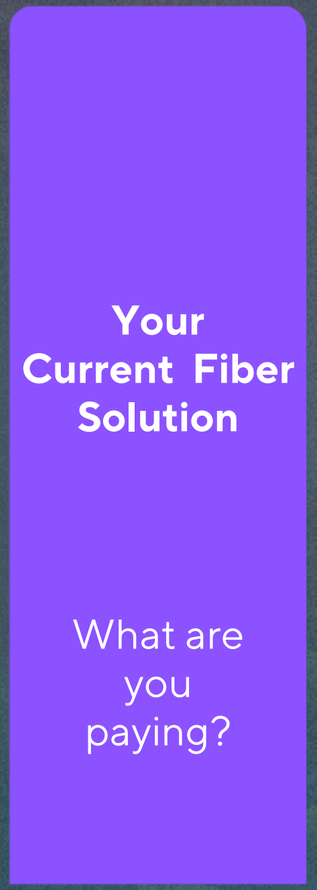
OpenPON Has Lower CapEx

Example:
Year 1
500 Subscribers

OpenPON Solution Includes:

- **x500 ONTs**
- x8 OLTs
- x8 Splitters
- x8 Software License/Yr
- x1 Switch
- Support/Yr

$78,115



$???

*Based on the OpenPON Micro OLT solution available through Fonex.

*Please note: Pricing for the OpenPON and Comtrend solution may vary depending on a range of factors, including solution providers, specific configurations and implementation requirements. The cost indicated represents the potential lowest pricing available, but actual costs may be higher based on individual factors. For a precise quote tailored to your organization's needs, please contact our sales team.

COMTREND

What are You Paying to Maintain Broadband?

OpenPON Has Significantly Lower OpEx

Example:
Annual Cost/Year 2+
500 Subscribers

Your Current Fiber Solution

What are you paying?

OpenPON Ongoing Costs Include:

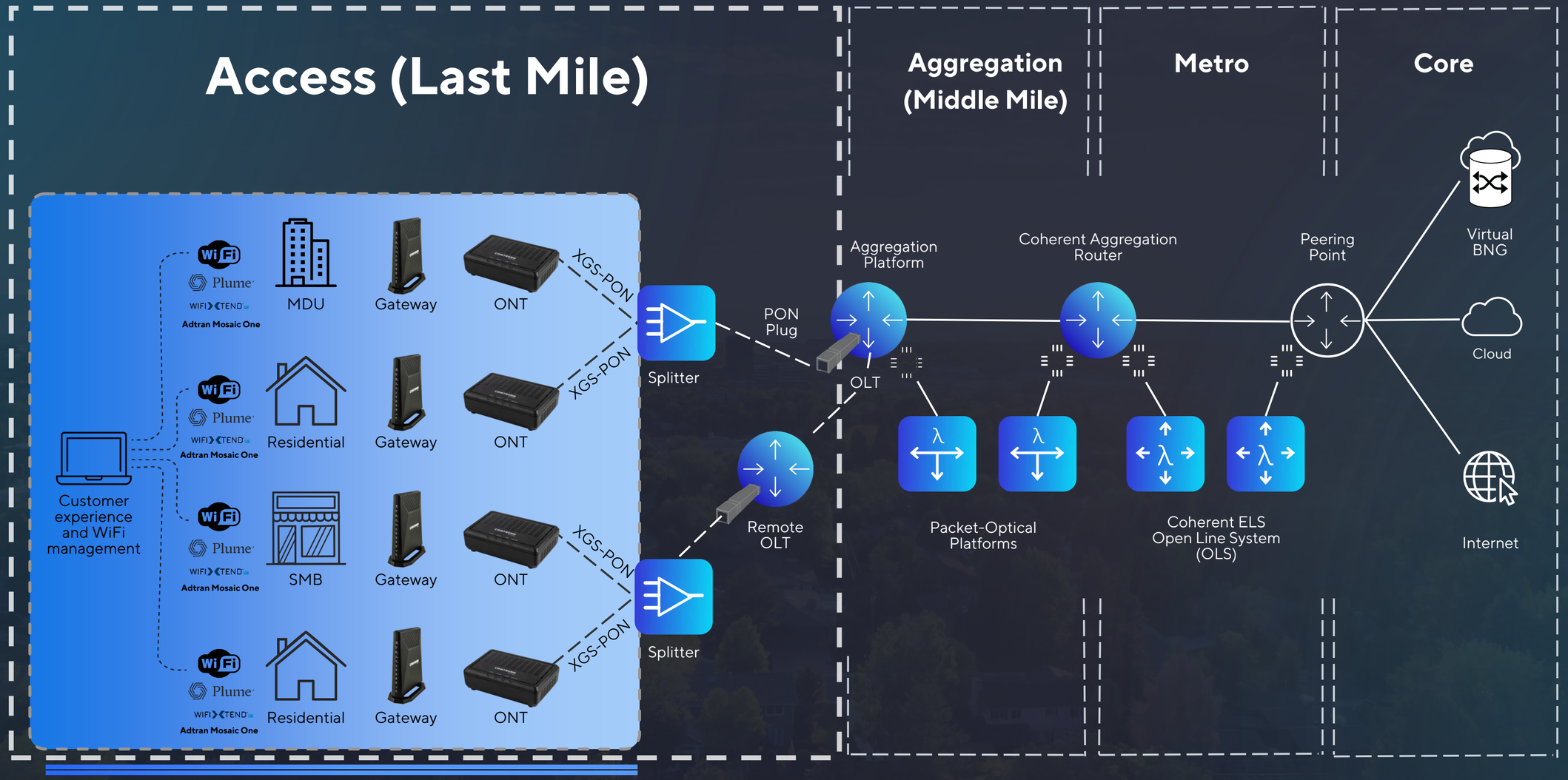
- x8 Software License/Yr
- Support/Yr

OpenPON Micro OLT
$1,500

*Based on the OpenPON Micro OLT solution available through Fonex.

*Please note: Pricing for the OpenPON and Comtrend solution may vary depending on a range of factors, including solution providers, specific configurations and implementation requirements. The cost indicated represents the potential lowest pricing available, but actual costs may be higher based on individual factors. For a precise quote tailored to your organization's needs, please contact our sales team.

Where does Comtrend fit into Fiber Deployments?



COMTREND

Comtrend Does the Work for You, so You Have a Seamless Experience

- Powerful partnerships
- Rigorous testing & integrations
- Certifications

COMTREND

Who We Work With

Technology Partners

harmonic

cisco

ciena

VAR/SI Partners

Netceed

FONEX

Distribution Partners

Power & Tel

CSSA

GOLDFIELD TELECOM

GraybaR

KGPCo

nexicom SYSTEMS

COMTREND

OpenPON Key Takeaways

In Today’s Market, You Need a Competitive Edge

Real Benefits to Open

OpenPON is Growing & Key Players Continue to Enter the Market

Q & A

Next Steps

LETS GET IN TOUCH!

COMTREND

AJ Saccacio

Email: Anthony.Saccacio@Comtrend.com

Phone: (949) 500-9455

COMTREND

Bradley Joe

Email: Bradley.Joe@Comtrend.com

Phone: (714) 317-9192

Thank you!

COMTREND

COMTREND

OpenPON Solutions with Comtrend

Comtrend offers compatibility with a wide range of hardware and software

Comtrend ONTs, Gateways, and Network Expansion