10G EPON Remote OLT
XE4202M
10G EPON R-OLT with DPoE™

ARRIS®

FEATURES

- Provides deep reach of IEEE 802.3av 10G EPON FTTx commercial and residential services well beyond the typical 20 km PON reach using remote nodes/VHubs and long-distance uplink optics
- Uses the ARRIS server-based OLT Manager application for provisioning and management operations; compatible with DOCSIS® back-office OSS systems and utilizing standard DPoE OAM messaging to configure R-OLTs and ONUs
- Standard 10 Gigabit Ethernet (10GE) optical interfaces to the Converged Interconnect Network (CIN) Secure-Leaf switch/router
- Subscriber access supports 10G/10G (10GBASE-PR30), 10G/1G (10/1GBASE-PRX30), and 1G/1G (1000BASE-PX20) EPON via separate optical transceivers. Each of two EPON ports support 128 ONUs.
- Seamless integration and coexistence with RF video and RFoG networks, supporting shared or independent FTTx installations
- Installs in NH2000, NC4000 HFC Nodes, and NH4000/NH4600 VHub/UVHub platforms
- Enables ONU provisioning using DPoE v2.0

Shown with XFP and SFP+ Transceiver Optics

PRODUCT OVERVIEW

The XE4202 10G EPON R-OLT (Remote Optical Line Terminal) module is installed into ARRIS NH2, NH4 VHub/UVHub, and NC4 HFC Node platforms enabling 10G and 1G symmetric and 10G/1G asymmetric EPON access connectivity from standard cable TV HFC or RFoG nodes and VHubs. The R-OLT allows operators to serve customers at distances well beyond the typical centralized PON reach by utilizing standard long haul 10GE uplink optics to connect the R-OLT to the S-Leaf switch/router in their Converged Interconnect Network.

Fiber-Deep   **10G EPON**   **DPoE**   **RFoG**   **FTTx**

With this 10G EPON R-OLT module, cable operators can cost-effectively and selectively migrate an existing DOCSIS HFC network to a standards-based 10G EPON FTTx network as it becomes justified by bandwidth demand and potential revenue, all while maintaining DOCSIS provisioning compatibility. The ARRIS XE4202M R-OLTs are specifically designed for MSOs with special consideration for evolving network needs. The R-OLT incorporates full traffic management and PON MAC/PHY capabilities in the node-based module with support for both IPv4 and IPv6. This allows direct connection to an operator's Converged Interconnect Network (CIN) with full flexibility for their operational processes. The R-OLT enables MSOs to substantially increase the ROI of their existing installed fiber base by adding high bandwidth 10G EPON based services and extending deployment of 10G EPON where the customers are located. Pushing 10G EPON capability to and through the legacy HFC node or RFoG VHub lowers cost by saving space and power and drives Ethernet fiber-based services through the last mile. The R-OLT works seamlessly with an RFoG overlay, the RF component in HFC nodes, and digital returns.

The R-OLT enables delivery of IEEE 802.3av 10G EPON FTTx services deep into the network interoperating with standard 10G EPON Optical Network Units (ONUs) via DPoE OAM. Each R-OLT supports a point-to-multipoint FTTx architecture with standard optical splitters. The R-OLT includes two 10G EPON ports, each supporting symmetric 10G/10G and 1G/1G and asymmetric 10G/1G data speeds. Each 10G EPON port supports 128 ONUs when using external 1x128 splitters for a module total of 256 subscriber ONUs per R-OLT. On the network uplink side, the module is fully compatible with a standard 10GE transport backhaul via available long-reach SPF+ transceivers. Using CWDM and DWDM wavelengths provides multiple options and deployment flexibility for utilizing scarce fiber resources and deploying 10G EPON close to the subscribers in the existing cable plant infrastructure.

ARRIS Server-based OLT Manager Application

The ARRIS OLT Manager is a software-defined networking (SDN) application that separates the management plane from the control and data planes found in the physical network function (PNF) of the Remote OLT. The OLT Manager also contains the virtual cable modem function and provides mediation between the operator DOCSIS back-office systems and the EPON functions defined in CableLabs® DPoE. The OLT Manager facilitates network management and programmability to improve scalability of operating disaggregated network devices like Remote-OLT. The OLT Manager simplifies and reduces the number of interface points to operator back-office systems. OLT Manager centralizes network element management plane functions by disaggregating the data forwarding control and data planes in the remote OLT.

The ARRIS OLT Manager provides:

- Provisioning and management functionality based on CableLabs DPoE v2.0 standard specifications
- Seamless integration of ARRIS 10G EPON R-OLTs into existing DOCSIS back-office infrastructure
- Integration with the existing infrastructure of DOCSIS networking services including: DHCP, TFTP, NTP, syslog servers, ToD, and SNMP manager
- Support of IPv4 and IPv6 for management, residential HSD, and services traffic
- Support of advanced QoS mechanisms for efficient, managed transport of diverse triple-play service offerings
- High Availability (HA) feature supports a redundant standby OLT Manager
- Full lifecycle management of multiple R-OLTs from initial deployment through the application of services and subscriber provisioning, and integration into monitoring and network operational support systems.
- Seamless integration of the management and assurance of 10G EPON R-OLT system resulting in a fully managed service deployment using existing operational production processes and procedures.
- Support for up to 200 R-OLTs (400 PON Ports) which equates to 51,200 ONUs with 1x128 splits per OLT Manager

Fiber-Deep   **10G EPON**   **DPoE**   **RFoG**   **FTTx**

ARRIS R-OLT and OLT Manager System
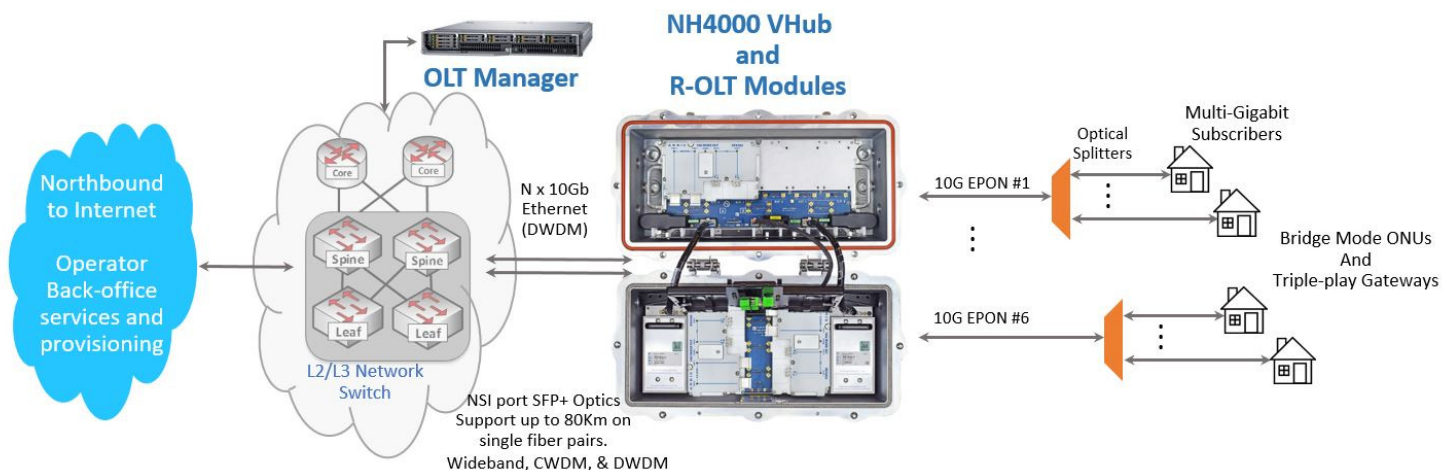
NODE AND VHUB PLATFORM OPTIONS AND FEATURES						
Platform[2, 6]	NC4000 HFC Node with OA Tray RF Amplifier	NH4000-Legacy VHub[5] or NH4000-UVP UVHub	NH4600-UVP Hi-thermal UVHub[7]	NH4000-Legacy VHub[5] with RFoG	NH4000-UVP UVHub with RFoG	NH2000-VHPx[8] Mini-VHub
Deployment Model	RF and 10G EPON	10G EPON Only	10G EPON Only	RFoG and 10G EPON	RFoG and 10G EPON	10G EPON Only
RFoG Receivers	0	0	0	1[3]	1, 2[4]	0
R-OLT Modules	1	1, 2, 3	1, 2, 3	1, 2	1, 2	1, 2
PON Serving Groups	2	2, 4, 6	2, 4, 6	2, 4	2, 4	2, 4
10GE Uplinks	2	2, 4, 6	2, 4, 6	2, 4	2, 4	2, 4
PON Subscriber ONUs[1] (max)	256	768	768	256[9]	256[9]	512

NOTES:

1. Using 1:128 splitters (maximum) on each R-OLT Port
2. Using 95°C SFP+ for uplinks and industrial temperature range 85°C XFP PON transceiver optics (1000940) for NC4 RF Node applications and extended industrial temperature range 90°C XFP PON transceiver optics (1001310) for EPON only and RFoG NH4/NH2 VHub applications
3. Using OR4178H Diplexer/Receiver (# of R-ONUs and Returns depends on configuration)
4. Using OR4178H or OR4216R Diplexer/Receivers (# of R-ONUs and Returns depends on configuration)
5. NH4000-RFPx, NH4000-CNPx, NH4000-VHPx
6. All platforms must use PS4101 or PS4102 150 Watt Power Supplies
7. Recommended for 3x R-OLT and very dense RFoG + R-OLT implementations
8. NH2000-VHP1 (with PS4001 power supply) supports one R-OLT; VHP4 (with PS4101 power supply) supports two R-OLTs
9. Since EPON and RFoG access fibers are shared inside of the OR4178H, PON ONU feed is limited to 256 when 2x R-OLTs are used

Fiber-Deep	10G EPON	DPoE	RFoG	FTTx

XE4202M

SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions	6.5" L x 1.5" H x 4.0" W (16.5 x 3.8 x 10.2 cm)
Weight	2.85 lbs (1.3 kg) without SFP+/XFP Transceivers; 3.2 lbs (1.45 kg) with transceivers (+/- 0.05 lbs: 0.022 kg)
Environmental	
Operating Temperature Range	-40° to +60°C (-40° to 140°F)
Storage Temperature Range	-40° to +60°C (-40° to 140°F)
Humidity	5% to 95% non-condensing
Power Requirements	
Powering	+24V$_{DC}$ and +5V$_{DC}$, supplied by NH2000, NC/NH4000 VHub/UVHub platform PS4101 or PS4102 power supplies (required), depending on the node/VHub platform used.
Power Consumption	35.5 W maximum, including two (2) XFP and two (2) SFP+ transceivers operating at 10/10 or 10/1 Gbps
General	
	Hot plug-in/out; XFP 10G EPON PON ports (2); SFP+ Uplink NSI ports (2)
	Supports up to 256 subscriber ONT/ONUs per module (128 ONT/ONUs per 10G EPON port)
Subscriber-side 10G EPON Ports (2)	
Interface Type	Two (2) simplex bidirectional IEEE 802.3av 10G EPON subscriber-side optical XFP plug-in ports (PON 0 and PON 1) for 10G/10G (10GBASE-PR30), 10G/1G (10/1GBASE-PRX30), and 1G/1G (1000BASE-PX20) optical transceiver support. Each port supports up to 128 subscriber ONUs: (256 total per module, using external splitters). ARRIS qualified XFP transceivers are purchased separately. See supported XFP part numbers under Ordering Information.
Network Uplink Optical Ports (2)	
Interface Type	LC Duplex; Two (2) network-side optical ports (NSI Port 0 and NSI Port 1) support single-mode SFP+ (10 Gbps) cages for standard uplink applications. ARRIS qualified SFP+ transceivers are purchased separately. See supported SFP+ part numbers under Ordering Information.
LED Indicators and Descriptions	
Power	Green = Module ON (receiving power); Dark = Module OFF (not receiving power)
10G EPON Port 0 and 10G EPON Port 1 LEDs	Refer to TM 1512184 XE4202M Physical Installation Guide for LED indicator colors and definitions
NSI Port 0 and NSI Port 1 LEDs	Refer to TM 1512184 XE4202M Physical Installation Guide for LED indicator colors and definitions
Provisioning and Monitoring	
	OLT Manager application: Operator-based virtualized R-OLT lifecycle manager and DPoE provisioning system interface for Optical Network Units (ONUs)
Regulatory and Safety	
	EMC: 47 CFR 15 – Sub Part B, Class A; CISPR 32 IEC/EN 55032; CISPR 24 IEC/EN 55024; VCCI V-32-1; VCCI A; VCCI B; 2014/30/EU Electromagnetic Compatibility Directive (EMC); IEC 60950-1:2005+A1+A2 – ITE; EN 60950-1:2006+A11+A1+A12+A2 – ITE; IEC 60950-22:2005 – ITE; EN 60950-22: 2006+A11 – ITE; IEC/EN 60825-1:2014; IEC/EN 60825-2:2004+A1+A2; UL 60950-1-07+A1+A2; UL 60950-22:2007 R12.11; CAN/CSA-C22.2 No. 60950-1-07+Amd 1+Amd 2 – ITE; CAN/CSA-C22.2 No.60950-22-07+GI1 (R2012) – ITE; Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007; 2014/35/EU Low Voltage Directive (LVD); TUV EN 6-950-1, EN60825-1,-2.
Environmental	ROHS, WEEE
Compatible Node and VHub Platforms	
	The XE4202 R-OLT can be installed into any new or existing NH2000 and NC/NH/VH4000 configurations where there are three (3) adjacent slots available to supply power through the board connectors to the XE4202 R-OLT. Installation into existing platforms however requires upgrade of the power supplies to the ARRIS PS4101 or PS4102 units to ensure ample support of 35.5 Watts for each R-OLT installed, plus support of all additional powered modules in the housing. 35.5 W is the maximum power consumption for one R-OLT with two ARRIS R-OLT qualified NSI port and two ARRIS R-OLT qualified EPON port transceivers operating at 10/10 or 10/1 Gbps. For RF Node installations, utilize I-temp XFP optics. For VHub installations with RFoG or EPON only, utilize extended temperature XFP PON optics. Platform thermal specifications versus total active module thermal performance must be considered. Contact ARRIS Field Services for additional clarification. The PS4101 power supply must alternatively be used if +12v and +3.3v DC are also required to support other modules in the platform. The NH4600-UVP2 Hi-thermal VHub platform is recommended in installations where 3x R-OLTs are used or all housing slots are filled (RFoG).

Ask us about the complete Access Technologies Solutions portfolio: FTTx-XE4202M

| Fiber-Deep | 10G EPON | DPoE | RFoG | FTTx |

ORDERING INFORMATION

Model Name	Part Number	Description
XE4202M-00-D	1000947	10G EPON Optical Line Terminal (R-OLT) for NH series nodes and VHub/UVHubs in a triple-wide module. Two pluggable network uplink interfaces for 10GigE SFP+ and two pluggable access interfaces for 10G EPON XFPs. Network interface SFP+ and 10G EPON XFP plug-in transceiver modules must be purchased separately. See information on page 3, under "Compatible Nodes and VHub Platforms". The order includes access to and download of the OLT Manager application and documentation.
PON XFP Transceivers		
OLT-XFP-PRX30-QUAD-I	1000940	10G EPON XFP Optical Transceiver Module for R-OLT PON interface, 10G/10G (10GBASE-PR30), 10G/1G (10/1GBASE-PRX30), 2G/1G (Turbo Mode), and 1G/1G (1000BASE-PX20) -40° to +85°C (-40° to +185°F) industrial temperature rated. See data sheet for details. Industrial temperature XFP for NC4000 RF Node applications.
N/A	1001310	10G EPON XFP Optical Transceiver Module for R-OLT PON interface, 10G/10G (10GBASE-PR30), 10G/1G (10/1GBASE-PRX30), 2G/1G (Turbo Mode), and 1G/1G (1000BASE-PX20) -40°C to +90°C (-40° to +194°F) extended industrial temperature rated. See data sheet for details. Extended range industrial temperature XFP for NH4000/NH2000 VHub PON only and RFoG applications.
Uplink SFP+ Transceivers 40 km DWDM		
TTD4540-xx-PI		SFP+ Transceiver, 10 Gbps, ITU channel xx (20–59), LC/UPC, 40 km, -40° to +95°C (-40° to +203°F), DWDM. See data sheet for details.
Uplink SFP+ Transceivers 80 km DWDM		
TTD4580-xx-PI		SFP+ Transceiver, 10 Gbps, ITU channel xx (20–59), LC/UPC, 80 km, -40° to +95°C (-40° to +203°F), DWDM. See data sheet for details.
Uplink SFP+ Transceivers 40 km CWDM		
TTCxxxx-TL40 (pending qualification)		SFP+ Transceiver, 10 Gbps, xxxx = 8 CWDM wavelengths 1470–1610 nm, LC/UPC, 40 km, -40° to +95°C (-40° to +203°F). See data sheet for details.
Uplink SFP+ Transceivers 80 km CWDM		
TTCxxxx-TL80 (pending qualification)		SFP+ Transceiver, 10 Gbps, xxxx = 8 CWDM wavelengths 1470–1610 nm, LC/UPC, 80 km, (1570, 1590, 1610 nm limited to 70 km) -40° to +95°C (-40° to +203°F). See data sheet for details.

RELATED PRODUCTS

OLT Manager Application	NC4 Node, NH2/NH4/VH4 VHub/UVHub Platforms
XFP PON Transceivers	10G SFP+ Transceivers
OR41x8, OR4216 Diplexer/Receivers	VT4250, DT4250 Return Transmitters

Customer Care

Contact Customer Care for product information and sales:
- United States: 866-36-ARRIS
- International: +1-678-473-5656

Note: Specifications are subject to change without notice.