iConverter® XM5 Aggregation Demarcation Device

Carrier Ethernet 2.0 Certified 10 Gigabit Aggregation NID

The iConverter® XM5 Aggregation Demarcation Device provides aggregation and demarcation for Carrier Ethernet 2.0 services. The XM5 Aggregation Demarcation Device supports the latest carrier-class Ethernet Service OAM, testing and protection standards. These advanced capabilities enable rapid service deployments, Service Level Agreement (SLA) assurances, comprehensive fault management and service protection to reduce operating costs and improve customer satisfaction.

The XM5 Aggregation Demarcation Device features two 10G SFP/SFP+ or XFP ports, twelve Gigabit/Fast Ethernet SFP ports, and two 10/100/1000 RJ-45 ports for aggregation of wholesale Ethernet, 4G/LTE mobile backhaul, business and cloud services.

The XM5 supports MEF-certified User-to-Network Interface (UNI) functions including Class of Service (CoS) management, granular rate-limiting, and 802.1ad Provider Bridge VLAN stacking (Q-in-Q) for service multiplexing of multiple E-Line, E-LAN and E-Tree services. The XM5 provides flexible per-flow service mapping, traffic policing and shaping. CIR/EIR "two rates, three colors" ingress port policing provides the granular bandwidth optimization required for CE 2.0 services such as Business Ethernet Services and Mobile Backhaul. The XM5 also provides advanced classification and filtering of subscriber traffic as an EVC or CoS flow based on Layer 1, 2, 3 or 4 identifiers.

The XM5 supports carrier-class Ethernet Service OAM standards. IEEE 802.1ag Connectivity Fault Management (CFM) proactively monitors service availability and provides tools for rapid fault isolation. ITU-T Y.1731 Performance Monitoring provides the ability to monitor key SLA parameters including frame delay, frame delay variation and frame loss. These OAM features provide proactive fault detection and rapid isolation of potential service problems, enabling SLA assurance while reducing Operational costs (OPEX).

The XM5 supports ITU-T Y.1564 and RFC 2544 service testing to easily verify the configuration and performance of Ethernet services prior to customer hand off. RFC 2544 provides per flow testing of Key Performance Indicators (KPI), such as throughput, latency, jitter and frame loss up to full wire speed. Y.1564 is a comprehensive Carrier Ethernet testing standard that tests all data flows and service attributes, including multi-flow Information Rate and Traffic Policing.

SFPs not included

KEY FEATURES

- MEF Carrier Ethernet 2.0 Certified 10 Gigabit and 1000Mbps Ethernet Aggregation NID
- Integrated IPv4, IPv6, SNMPv1/v2c/v3, SSH, Telnet and IP-less 802.3ah OAM management
- SNMP management via NetOutlook® Network Management software
- Port configuration:
  - 2 SFP/SFP+ or XFP Ports
  - 12 100/1000 SFP Ports
  - 2 RJ-45 10/100/1000 Ports
- Supports dual fiber and single-fiber SFP/SFP+/XFP transceivers for standard, CWDM or DWDM wavelengths
- RJ-45 port supports 10/100/1000 and Half/Full-Duplex auto-negotiation and MDI/MDIX auto-crossover
- 10,056 byte Jumbo frames
- Advanced traffic management with service mapping, traffic policing and shaping with Hierarchical Rate Limiting
- IEEE 802.1ag Connectivity Fault Management
- ITU-T Y.1731 End-to-End Performance Monitoring
- RFC 5357 TWAMP responder and initiator
- Zero-Touch Provisioning
- ITU-T Y.1564 Ethernet Service Activation Testing
- IETF RFC 2544 Ethernet Service Activation Testing
- ITU-T G.8262 Sync-E and IEEE 1588v2 Timing
- ITU-T G.8031 and G.8032v2 Ethernet Protection Switching
- IEEE 802.1ax/802.3ad LAG with LACP
- Available with redundant DC terminal power inputs
- TAA, BAA and NDAA Compliant, and Made in the USA
- Commercial (0 to 50ºC), wide (-40º to 60ºC) and extended (-40º to 75º C) temperature ranges

The XM5 supports ITU-T G.8031 Ethernet Linear Protection Switching and G.8032v2 Ethernet Ring Protection Switching with Connectivity Check Messages (CCM) at 3.3ms rate for sub-50ms protection switching. G.8032v2 includes multi-ring protection and sub-ring support.

Zero-Touch Provisioning (ZTP) allows providers to achieve efficiencies in service activation that accelerate turn up and reduce the need for on-site technicians. ZTP allows service provisioning to be centralized, standardized and remotely managed.

The integrated management eliminates the cost and space required for external management hardware. The integrated management provides comprehensive remote configuration and performance monitoring.

The XM5 supports IPv4 and IPv6 addressing, IP-Less protocol using the IEEE 802.3ah OAM channel or using SNMPv1/v2c/v3, SSH, Telnet or serial console port.

The IP address is user-defined or can be resolved through DHCP. Telnet and serial console (CLI) management interfaces are also supported, and utilize an easy-to-use, menu-driven interface. The CLI interface provides local configuration access.

SNMP management is available via Omnitron's NetOutlook® SNMP Network Management Software with an intuitive Graphical User Interface, or third party SNMP software.

The XM5 is available with a single internal AC power supply or single or dual DC power terminals. Featuring high port density in a compact 19" 1U rack mount chassis, the XM5 Aggregation Demarcation Device can be deployed indoors or outdoors in an all-weather enclosure. All data ports, timing I/O, and power inputs are front-loading for easy access.

The XM5 can be deployed as a node on a 10G ring with Gigabit aggregation ports, or as a demarcation NID on a 10G access link with aggregation UNI ports for multiple tenants or cell towers.

ADVANCED FEATURES

Management
IPv4, IPv6, Telnet, SNMPv1, SNMPv2c, SNMPv3, SSH, Serial Console
SNMP management via NetOutlook Network Management software
MEF 30 and 31 Service OAM Fault Management MIBs
Link Layer Discovery Protocol (LLDP)
Syslog
Alarm Relay Contacts
Traffic Management
IEEE 802.1Q VLAN Tagging
IEEE 802.1ad Q-in-Q VLAN Tagging
Service Multiplexing of up to 256 EVCs
User-configurable Ethertype
All ports configurable as UNI or NNI
Ingress and Egress traffic management
Hierarchical rate limiting with two-level color aware policing
CIR/EIR color aware "two rates, three colors" bandwidth profiles
Port Mirroring
IEEE 802.1p CoS Priority
per Port, VLAN ID, PCP, IPv4/IPv6 (TOS/DiffServe) Priority, MAC address, IP address, TCP Port or L2CP
L2CP Policy Management
L2PT Tunneling to encapsulate STP, VTP, PVST and CDP protocols
RFC 4541 IGMP Snooping
DHCP Relay Option 82
Timing and Synchronization
IEEE 1588v2 Boundary Clock, Slave Clock and Transparent Clock
ITU-T G.8262 Synchronous Ethernet
10 MHz, 1 PPS Clock I/O
Network Time Protocol (NTP)

Service OAM and Testing
IEEE 802.3ah Link OAM with Dying Gasp
IEEE 802.1ag Connectivity Fault Management with 8 Maintenance Domain levels and 256 Maintenance Associations
IEEE 802.1ag Maintenance Intermediate Points for fault isolation
ITU-T-Y.1731 Performance Monitoring with threshold monitoring and crossing alerts
Advanced classification and filtering of Layer 1, 2, 3 or 4 subscriber traffic as an EVC or CoS flow
RFC 5357 TWAMP IP SLA Performance Monitoring
IETF RFC 2544 (built-in Test-head) with wire-speed, per flow testing of throughput, latency, jitter and loss
ITU-T-Y.1564 Service Testing (built-in Test-head) with multi-flow testing of information rate, latency, jitter and frame loss
Per port and per flow loopback with MAC (Layer 2) swap or IP (Layer 3) swap
Third party in-band loopback support
Zero-Touch Provisioning (DHCP/TFTP)
Portal integration with Cyan Blue Planet, Ocular IP, Orion Solarwinds and Web EMS
Built-in UTP cable tester for troubleshooting to the Customer Equipment
Protection and Redundancy
Port Redundancy (Primary and Backup Link)
IEEE 802.1ax/802.3ad LAG with LACP (1:1 and 1+1)
ITU-T-G.8031 Ethernet Linear Protection with sub-50ms failover
ITU-T-G.8032 Ethernet Ring Protection with sub-50ms failover
IEEE 802.1w Rapid Spanning Tree Protocol
Security and Authentication
TACACS+, RADIUS, 802.1x
Access Control Lists

For 10G applications requiring a smaller form factor, see the iConverter XM5 NID.

APPLICATION

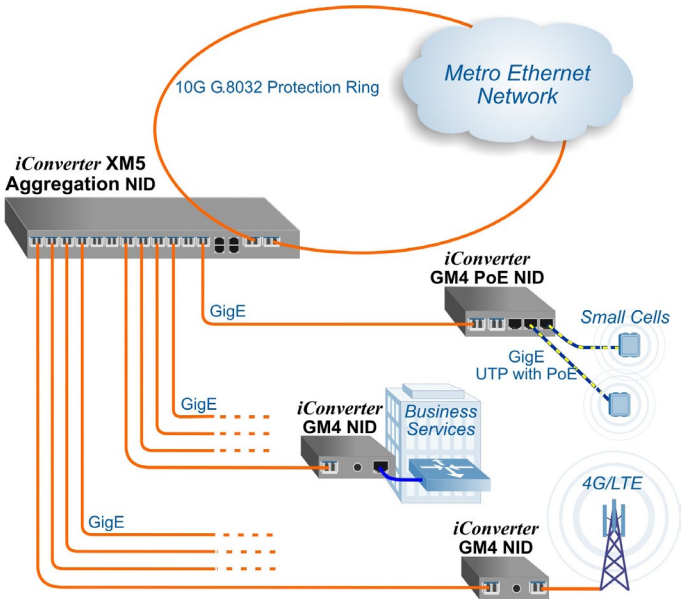
Metro Ethernet Ring

In this application example, a iConverter XM5 Aggregation Demarcation Device is deployed as an Carrier Ethernet aggregation node on a 10G fiber ring. The XM5 Aggregation Demarcation Device supports G.8032v2 Ethernet Ring Protection Switching for service protection with sub-50ms failover.

The XM5 Aggregation Demarcation Device provides twelve fiber access links (and two 10/100/1000 RJ-45 ports) for multiple Small Cell, 4G/LTE and business services.

iConverter GM4 PoE NIDs and GM4 NIDs are deployed at the end of the access links for CE 2.0 demarcation.

The XM5 Aggregation Demarcation Devices provide comprehensive support of Carrier Ethernet performance monitoring, fault management, timing and protection standards to enable rapid service deployments and service assurance.



SPECIFICATIONS

Description	***iConverter* XM5** 10G Aggregation Demarcation Device	
Standard Compliances	IEEE 802.3, 802.1AX, 802.1Q, 802.1ad, 802.1p, 802.3ah, 802.1ag, 1588v2 RFC 2819 (RMON), 2863 (IF-MIB), 2131 (DHCP), 2544 ITU-T G.8031, G.8032, G.8262, Y.1731, Y.1564 MEF Carrier Ethernet 2.0 Certified MEF 6.2, 9, 10.2, 14, 21, 26.1, 30, 31, 33	
Regulatory Compliances	Safety: EMI: ACT:	UL, cUL, CE, NEBS Level 3, UKCA FCC Class A TAA, BAA, NDAA
Environmental	RoHS, WEEE, REACH	
Port Types	Copper: Fiber: Serial: Management:	10/100/1000BASE-T (RJ-45) 100BASE-X (SFP) 1000BASE-X (SFP) 10GBASE-R (SFP+, XFP) RS-232 (RJ-45) 10/100/1000BASE-T (RJ-45)
Cable Types	Copper: Fiber: Serial: Management:	EIA/TIA 568A/B, Cat 5 and higher Multimode: 50/125µm, 62.5/125µm Single-mode: 9/125µm EIA/TIA 568A/B, Cat 3 and higher EIA/TIA 568A/B, Cat 5 and higher
AC Power Requirements	80 - 264VAC/50-60Hz 0.8A @ 110VAC IEC 320 C14	
DC Power Requirements	+/- 20 to 60VDC 1.2A @ 48VDC (56W Max) 3-Pin Terminal (isolated)	

Management	IPv4, IPv6, Telnet, SNMPv1, SNMPv2c, SNMPv3, SSH, Serial Console	
Frame Size	Up to 10,056 bytes	
Dimensions W x D x H	17.15" x 9.0" x 1.70" (435.61 mm x 228.6 mm x 43.18 mm)	
Weight	1 power supply: 2 power supplies:	7.5 lbs (3.41 kg) 9.0 lbs (4.1 kg)
Temperature	Commercial: Wide: Extended Storage:	0 to 50°C -40 to 60°C -40 to 75° C -40 to 80°C
Humidity	5 to 95% (non-condensing)	
Altitude	-100m to 4,000m	
Warranty	3 year warranty with 24/7/365 free Technical Support	

ORDERING INFORMATION

Step 1: Choose a Base Part Number (xxxx-C2-ppt)

Model Number	Description
9620-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports and 2 RJ-45 10/100/1000BASE-T Ports
9621-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports and 2 RJ-45 10/100/1000BASE-T Ports
9624-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock
9625-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock
9626-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock and Alarm Relay Contact
9627-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock and Alarm Relay Contact
9630-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact and 1588 Clock I/O Connector
9631-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact and 1588 Clock I/O Connector
9632-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock and G.8262 SyncE
9633-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock and G.8262 SyncE
9634-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact and G.8262 SyncE
9635-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact and G.8262 SyncE
9638-C2-ppt	XM5-Aggr with 2 SFP/SFP+ Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact, 1588 Clock I/O Connector and G.8262 SyncE
9639-C2-ppt	XM5-Aggr with 2 XFP Ports, 12 100/1000BASE-X SFP Ports, 2 RJ-45 10/100/1000BASE-T Ports and 1588 Boundary/Slave Clock, Alarm Relay Contact, 1588 Clock I/O Connector and G.8262 SyncE

All models support IEEE 1588 Transparent clock mode.

Contact Omnitron for other options. Order the appropriate 10 Gigabit, Gigabit and Fast Ethernet SFPs separately. Visit the Omnitron Optical Transceivers web page.

Step 2: Choose a Power Option (xxxx-C2-ppt)

B1 = Single IEC 320 C14 Connector and Internal AC Power Supply, 80 - 264 VAC, 50-60Hz, with US power cord
C1 = Single Direct DC input, +/- 20VDC to 60VDC, 3 pin terminal connector, no AC/DC power adapter
C2 = Dual Direct DC input, +/- 20VDC to 60VDC, 3 pin terminal connector, no AC/DC power adapter

Step 3: Choose an Operating Temperature Range (xxxx-C2-ppt)

<leave blank> = Commercial temperature (0 to 50°C)
W = Wide temperature (-40 to 60°C)
Z = Wide temperature (-40 to 75°C)