Overview and Comparison of *iConverter*® Network Interface Devices

iConverter Network Interface Devices (NIDs) provide Carrier Ethernet demarcation for wholesale and retail Ethernet business services, 4G/LTE mobile backhaul, small cells, carrier Wi-Fi, and cloud services.

iConverter NIDs are compact demarcation devices that support advanced Performance Monitoring, Service Activation Testing, Fault Management, timing and synchronization, and protection.

SDN+NFV Ready Demarcation – iConverter NIDs are integrated into service orchestration platforms with SDN+NFV ecosystem partners.

Automated Service Creation – Zero-Touch Provisioning and Service Activation Testing enable rapid service turn-up.

Guaranteed Performance and Uptime – iConverter NIDs support performance monitoring across Layer 2, 3 and 4 networks with advanced fault management and service protection.

Simplify Inventory – Deploy the same iConverter GM4 or XM5 NID in a variety of access networks (active or passive) and for different service types to simplify equipment inventory.

Tiered NIDs Match Cost to Revenue – Omnitron provides a tiered product offering to align features and costs with the different types of Ethernet services.

- **Carrier Ethernet 2.0 NIDs** provide advanced demarcation for wholesale and retail services with comprehensive service assurance
- **Service OAM NIDs** provide demarcation for Carrier Ethernet services with performance SLAs
- **Link OAM NIDs** provide cost-effective demarcation for internet access and best effort Ethernet and internet access services

CARRIER ETHERNET 2.0 NIDs

MEF CE 2.0 Certified NIDs provide demarcation with Multiple Classes of Service (Multi-CoS), Manageability and Interconnect. These services reflect major new capabilities of E-Line, E-LAN, E-Tree and E-Access services. These state-of-the-art NIDs enable new services and reduce operating costs with automated service provisioning and testing.

iConverter GM4 NIDs

iConverter GM4 NIDs deliver advanced Carrier Ethernet 2.0 services, and are the most compact NIDs available with the lowest power consumption. They are available in 2 and 3 port standalone units and chassis plug-in modules, and 5-port standalone models with a variety of port configurations.

iConverter GM4 PoE NIDs

iConverter GM4 PoE NIDs deliver advanced Carrier Ethernet 2.0 services and provide integrated Power over Ethernet (PoE) at the demarcation. GM4 PoE NIDs support all the functions of the GM4 NIDs, and add 802.3af PoE (15.4W), 802.3at PoE+ (30W), and up to 60W on each RJ-45 port for small cell and WiFi applications.

iConverter XM5 and XM5 Aggregation NIDs

iConverter XM5 NIDs provide advanced 10G demarcation and aggregation for Carrier Ethernet 2.0 services. The XM5 NIDs feature three 10G SFP+ or XFP ports and up to four Gigabit/100Mbps SFP or RJ-45 10/100/1000 ports.

The XM5 Aggregation and Demarcation Devices feature two 10G SFP+ or XFP ports, twelve Gigabit/100Mbps SFP ports, and two 10/100/1000 RJ-45 ports.

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SERVICE OAM NIDs

iConverter GM3 NIDs

iConverter GM3 NIDs provide MEF 9, 14 and 21 certified demarcation for Ethernet services delivered across one or more operator networks. IEEE 802.1ag and ITU-T Y.1731 Service OAM provides the fault detection and performance monitoring necessary to ensure proper enforcement and compliance to SLAs. The GM3 NIDs support Zero-Touch Provisioning (ZTP), color-aware rate limiting and Class of Service differentiation and prioritization.

iConverter SFP-NID™

The iConverter SFP-NID is a Small Form Pluggable (SFP) Gigabit optical NID that enables Service Providers to deliver low-latency, SLA-guaranteed Business Ethernet, 4G/LTE macro cell and small cell backhaul services. The SFP-NID can be installed directly into a switch, router or small cell, and saves Capital Expenditures (CAPEX) by eliminating the need for a standalone demarcation device. It also reduces Operating Expenditures (OPEX) by decreasing power consumption, space, installation and maintenance costs.

iConverter microNID™

The iConverter microNID is a low-latency, compact and cost-effective NID that provides service activation testing, fault and performance monitoring. The two-port microNID enables Service Providers to deliver premium services with Service Level Agreements where cost, space and power consumption are constraints. Cable MSOs can deliver value-added commercial Ethernet services and wireless backhaul over their existing DOCSIS networks with guaranteed Quality of Service.

LINK OAM NIDs

iConverter M2 NIDs

The iConverter M2 Class NIDs provide Ethernet E-Line service demarcation for services that do not require SLA performance assurance. These cost-effective NIDs support 802.3ah Link OAM with fault detection for Ethernet in the First Mile (EFM) access links. The M2 NIDs provide MEF 9, 14 and 21 certified Ethernet service demarcation in telecom networks, and mission-critical managed fiber links in enterprise, government and utility networks.

PORT INTERFACES

	M2 Class	GM3	SFP-NID	microNID	GM4	GM4 5-Port	GM4 PoE	XM5	XM5 Aggr.
Number of ports	2	2 or 3	1	2	2 or 3	5	Up to 5	7	16
10/100/1000BASE-T Copper	✓	✓		100/1000	✓	Up to 4		Up to 4	2
10/100/1000BASE-T Copper PoE/PoE+/60W							Up to 4		
1000BASE-X Fixed Fiber	✓	✓			✓				
Fiber SFP (100Mbps or 1000Mbps)	✓	✓	1000M	✓	✓	Up to 5	Up to 2	Up to 4	12
Copper SFP (10/100/1000Mbps)	✓	✓			✓	Up to 5	Up to 2	Up to 4	Up to 12
Fiber XFP or SFP+ (10G or 1000Mbps)								3*	2
Chassis Plug-In Modules	✓	✓			✓				

*The three 10G SFP+ ports also support 1000Mbps Fiber SFPs and 1000Mbps Copper SFPs.

Please consult Omnitron for other configurations.

MEF CE 2.0   CARRIER ETHERNET MEF 9/14/21   NEBS COMPLIANT LEVEL 3   MADE IN THE USA TAA Compliant   RoHS & WEEE COMPLIANT   Temperature HARDENED

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NID FEATURE COMPARISON

		M2 Class	GM3	SFP-NID	microNID	GM4	GM4 5-Port	GM4 PoE	XM5	XM5 Aggr.
MEF Compliance	Carrier Ethernet 2.0 Certified					✓	✓	✓	✓	✓
	MEF 9, 14 and 21	✓	✓			✓	✓	✓	✓	✓
Traffic Management	IEEE 802.1Q VLAN Tagging	✓	✓			✓	✓	✓	✓	✓
	IEEE 802.1ad Q-in-Q VLAN Tagging	✓	✓			✓	✓	✓	✓	✓
	64k Granular Rate Limiting	✓	✓			✓	✓	✓	✓	✓
	Hierarchical rate limiting with two-level policing		✓			✓	✓	✓	✓	✓
	CIR/EIR and CBS/EBS Policing and Shaping		✓			✓	✓	✓	✓	✓
	per Port		✓			✓	✓	✓	✓	✓
	per EVC		✓			✓	✓	✓	✓	✓
	per Class of Service		✓			✓	✓	✓	✓	✓
	per MAC Addr, IP Addr, ToS, DiffServe		✓			✓	✓	✓	✓	✓
	Port Mirroring		✓			✓	✓	✓	✓	✓
	IEEE 802.1p CoS Priority		✓			✓	✓	✓	✓	✓
	L2CP Policy Management		✓	✓	✓	✓	✓	✓	✓	✓
	RFC 4541 IGMP Snooping					✓	✓	✓	✓	✓
Timing and Synchronization	IEEE 1588v2 Transparent Clock					✓	✓	✓	✓	✓
	IEEE 1588v2 Slave Clock								✓	✓
	IEEE 1588v2 Boundary Clock								✓	✓
	Synchronous Ethernet					✓	✓	✓	✓	✓
Service OAM	IEEE 802.3ah Link OAM	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IEEE 802.1ag Service OAM		✓	✓	✓	✓	✓	✓	✓	✓
	ITU-T-Y.1731 Performance Monitoring		✓	✓	✓	✓	✓	✓	✓	✓
	TWAMP IP SLA Performance Monitoring			✓	✓	✓	✓	✓	✓	✓
	Syslog								✓	✓
	Trap Hosts; up to 8	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MIB Statistics (RMON)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Service Activation Testing	IETF RFC 2544 with built-in Test-head			✓	✓	✓	✓	✓	✓	✓
	Third-party in-band loopback support			✓	✓	✓	✓	✓	✓	✓
	ITU-T-Y.1564 Service Testing (built-in Test-head)			✓	✓	✓	✓	✓	✓	✓
Protection and Redundancy	Port Redundancy (Primary and Backup Link)		✓			✓	✓	✓	✓	✓
	LAG with LACP (1:1 and 1+1)					✓	✓	✓	✓	✓
	ITU-T-G.8031 Ethernet Linear Protection					✓	✓	✓	✓	✓
	ITU-T-G.8032 Ethernet Ring Protection					✓	✓	✓	✓	✓
	IEEE 802.1w Rapid Spanning Tree Protocol		✓			✓	✓	✓	✓	✓
Automatic Provisioning	Zero-Touch Provisioning (DHCP/TFTP)		✓			✓	✓	✓	✓	✓
	DPoE DEMARC Auto Configuration algorithm					✓	✓	✓		
Security and Authentication	TACACS+					✓	✓	✓	✓	✓
	RADIUS					✓	✓	✓	✓	✓
	802.1x					✓	✓	✓	✓	✓
	Access Control Lists					✓	✓	✓	✓	✓
Power	Redundant AC/DC Power Inputs						✓		✓	✓

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Bronze - Best Effort Ethernet Services
- Internet Access and Small Business
- Basic Management and Fault Detection

Silver - SLA Assured Services
- Carrier Ethernet Business Services and Mobile Backhaul
- Fault Management and Performance Monitoring

Gold - Carrier Ethernet 2.0 Services
- Advanced SLA assured services per Class of Service
- Rapid service turn up and testing

Platinum - Protected Carrier Ethernet 2.0 Services
- Advanced CE 2.0 Services
- Service protection with guaranteed uptime

SERVICE TYPES

		M2 Class (Bronze)	GM3 (Silver)	SFP-NID (Silver)	microNID (Silver)	GM4 (Gold and Platinum)	GM4 5-Port	GM4 PoE	XM5	XM5 Aggr.
MEF Defined Services	E-Line	✓	✓	✓	✓	✓	✓	✓	✓	✓
	E-LAN		✓	✓	✓	✓	✓	✓	✓	✓
	E-Tree and E-Access		✓			✓	✓	✓	✓	✓
	Carrier Ethernet 2.0 (all 8 Service Types[1])					✓	✓	✓	✓	✓
Flow Types	EVC	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Multiplexed EVC		✓	✓	✓	✓	✓	✓	✓	✓
	CE 2.0 Class of Service					✓	✓	✓	✓	✓
Types of Services	Business Services	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Cloud (Data Center) Services		✓	✓	✓	✓	✓	✓	✓	✓
	Low-Latency Financial Services			✓	✓	✓	✓	✓	✓	✓
	4G/LTE Mobile Backhaul	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Small Cell			✓	✓	✓	✓	✓	✓	✓
	Wholesale Ethernet		✓	✓	✓	✓	✓	✓	✓	✓
	Direct Internet Access	✓								
Service Assurance	Best Effort Services (No SLA)	✓								
	SLA Assured Services		✓	✓	✓	✓	✓	✓	✓	✓
	Port Failover Protection		✓			✓	✓	✓	✓	✓
	EVC Protection Switching					✓	✓	✓	✓	✓

[1] E-Line, E-LAN, E-Tree and E-Access, plus Multiplexed versions of each service for total of 8 MEF Defined Services

SDN, EMS and MANAGEMENT

		M2 Class	GM3	SFP-NID	microNID	GM4	GM4 5-Port	GM4 PoE	XM5	XM5 Aggr.
Management Interfaces and Protocols	Serial Console Interface	✓	✓		✓	✓	✓	✓	✓	✓
	Dedicated Ethernet Mgt. Interface								✓	✓
	Telnet	✓	✓	✓	✓	✓	✓	✓	✓	✓
	SSH					✓	✓	✓	✓	✓
	SNMP v1/v2c/v3	✓	✓	✓	✓	✓	✓	✓	✓	✓
Omnitron EMS and SNMP Management Software	NetOutlook Element Mgt. System		✓	✓	✓	✓	✓	✓	✓	✓
	NetOutlook Carrier Edition Software		✓	✓	✓	✓	✓	✓	✓	✓
	NetOutlook Management Software	✓	✓	✓	✓	✓	✓	✓	✓	✓
SDN+NFV	Ciena Blue Planet Integration		✓			✓	✓	✓		
Monitoring Portals and Software	OcularIP Portal Integration		✓			✓	✓	✓		
	SolarWinds Integration	✓	✓			✓	✓	✓		

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