iConverter® SFP-NID™
Small Form Pluggable Network Interface Device

The iConverter SFP-NID is a Small Form Pluggable (SFP) Gigabit Network Interface Device (NID). It enables Service Providers to deliver low-latency, SLA-guaranteed Business Ethernet, 4G/LTE macro cell and metro/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.

The SFP-NID is MSA SFF-8472 compliant and is available in standard and CWDM wavelengths with distances up to 80km. The 10km model has a power consumption of less than 1.5 watts. The SFP-NID functions as a 1000BASE-X Gigabit Ethernet SFP transceiver and features full digital diagnostic monitoring. The SFP-NID is also available with a 10/100/1000 and 1000 RJ-45 copper interface. The family of SFP-NIDs are part of the iConverter platform, and interoperates with all third-party, standards-compliant Carrier Ethernet network equipment and test equipment.

The SFP-NID supports 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 services.

The SFP-NID supports Ethernet Service OAM standards to enable SLA assured services. IEEE 802.1ag Connectivity Fault Management (CFM) proactively monitors service availability and provides tools for rapid fault isolation. ITU-T Y.1731 and IETF RFC 5357 Performance Monitoring provides the ability to monitor frame delay, frame delay variation and frame loss.

The SFP-NID supports ITU-T Y.1564 and IETF RFC 2544 service testing to rapidly verify the configuration and performance of Ethernet services prior to customer hand off. RFC 2544 provides wire-speed, per flow testing of throughput, latency, jitter and frame loss. Y.1564 is a comprehensive Carrier Ethernet testing standard that tests service attributes, including multi-flow Information Rate and Traffic Policing. Y.1564 tests all attributes simultaneously so testing is run quickly and efficiently.

Management can be accessed through the optical port or the electrical port, allowing it to be installed and managed anywhere along a Carrier Ethernet service path were UNI or ENNI functions are required. The SFP-NID can be remotely managed via TELNET, SNMPv1, SNMPv2c and SNMPv3.

KEY FEATURES

- Gigabit SFP Carrier Ethernet Demarcation Device with optical and RJ-45 interfaces

- Less than 1.5W power consumption for the 10km model

- Advanced traffic management with service mapping and traffic policing and shaping

- Hierarchical Rate Limiting with two level color aware policing

- IEEE 802.1Q VLAN tagging and 802.1ad Q-in-Q VLAN stacking

- IEEE 802.1ag End-to-End Fault Management (FM) with 3.3msec Continuity Check Messages (CCM)

- Initiator and Reflector:
    - ITU-T Y.1731 Performance Monitoring (PM),
    - IETF RFC 5357 TWAMP Measurement Protocol,
    - IETF RFC 2544 Ethernet Service Testing and
    - ITU-Y.1564 Ethernet Service Activation Testing

- ITU-T G.8262 Sync-E (RJ-45 Models only)

- IEEE 1588v2 Precision Time Protocol

- Third party Tester interoperability with Auto Loop Up/Down

- Management via TELNET, SNMPv1, SNMPv2c, SNMPv3
    - Omnitron's NetOutlook® NMS
    - Third party NMS, EMS and SLA Monitoring Software

- Static or Dynamic IP (DHCP Client) Configuration

- SNMP Traps and Configurable Trap Hosts

- Compliant with MSA SFF-8472 standard for interoperability with other network devices

- Made in the USA

OST Omnitron Systems

APPLICATION EXAMPLE
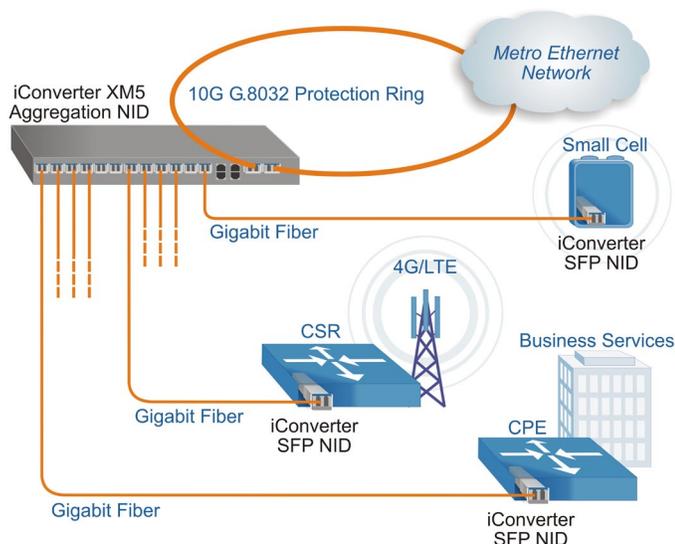
This application example shows how a Service Provider can add Performance Monitoring and Fault Management to a small cell, a macro cell and to business services.

An iConverter XM5 Aggregation and Demarcation Device is deployed on a 10G Metro Ethernet fiber ring, providing aggregation to multiple Gigabit Ethernet fiber access links to various locations.

Installation of SFP-NIDs instead of standard optical SFPs into the small cell and into the router at the macro cell tower immediately adds performance monitoring and fault management functionality to the backhaul services. The SFP-NID provides network support for G.8262 Sync-E timing (RJ-45 models only) and 1588v2 clocking.

Installation of an SFP-NID into a CPE switch at the customer's location easily adds SLA monitoring capability for the Service Provider and the Subscriber.

By simply plugging the SFP-NID into existing network equipment, a Service Provider can add SLA monitoring capabilities to its services, increase the value of the service, and enhance the customer experience.

SPECIFICATIONS

Description		*iConverter* **SFP-NID**
		1000BASE-X Transceiver Network Interface Device
Standard Compliances		MSA SFF-8472 IEEE 802.1Q, 802.1ad, 802.1ag, 1588v2 ITU-T Y.1564, Y.1731, G.8262 RFC 2544, RFC 5357 (TWAMP) MEF 21, 30, 31
Regulatory Compliances		UL, cUL, FCC Class A, NEBS 3, RoHS, REACH, WEEE
Management		Telnet, SNMPv1, SNMPv2c, SNMP v3
Frame Size		10,240 bytes
Port Type	Fiber:	1000BASE-LX (LC) 1000BASE-EX (LC) 1000BASE-ZX (LC)
	Copper:	10/100/1000BASE-T (RJ-45) 1000BASE-T (RJ-45)
Cable Type	Fiber:	Single-mode: 9/125um
	Copper:	EIA/TIA 568A/B, Cat 5 UTP and higher
DC Power Requirements	DC Input: (SFP Receptacle)	< 1.5watts @ 3.3VDC (7299N-RJ-xx) < 1.5watts @ 3.3VDC (7207N-1) < 1.6watts @ 3.3VDC (7207N-2 and -3) < 1.6watts @ 3.3VDC (73xxN-1 and -3)
Operating Case Temperature		-40 to 85° C
Storage Temperature		-40 to 85° C
Dimensions W x D x H		Fiber: 0.54" x 2.72" x 0.49" (13.8mm x 69.2mm x 12.5mm) Copper: 0.53" x 2.69: x 0.54" (13.7mm x 68.51mm x 13.8mm)
Weight		Fiber: 0.84 oz. (24 grams) Copper: 0.95 oz. (27 grams)
Humidity		5% to 95% (non-condensing)
Altitude		-100m to 4,000m (operational)

Omnitron Systems

ORDERING INFORMATION

Model Number	Fiber Type	Spec. Distance (km)	Wavelength (nm)	Min Tx Power (dBm)	Max Tx Power (dBm)	Min Rx Power (dBm)	Max Rx Power (dBm)	Attenuation (dB)	Link Budget (dB)
Standard Wavelengths									
7207N-1	SM/DF	10	1310	-9.5	-3	-21	-3	-	11.5
7207N-2	SM/DF	34	1310	-5	-0	-24	-3	3	19
7207N-3	SM/DF	80	1550	-4	1	-24	-3	4	20
CWDM wavelengths									
7347N-1	SM/DF	40	1471	-5	0	-24	-3	3	19
7349N-1	SM/DF	40	1491	-5	0	-24	-3	3	19
7351N-1	SM/DF	40	1511	-5	0	-24	-3	3	19
7353N-1	SM/DF	40	1531	-5	0	-24	-3	3	19
7355N-1	SM/DF	40	1551	-5	0	-24	-3	3	19
7357N-1	SM/DF	40	1571	-5	0	-24	-3	3	19
7359N-1	SM/DF	40	1591	-5	0	-24	-3	3	19
7361N-1	SM/DF	40	1611	-5	0	-24	-3	3	19
7347N-3	SM/DF	80	1471	0	5	-24	-3	8	24
7349N-3	SM/DF	80	1491	0	5	-24	-3	8	24
7351N-3	SM/DF	80	1511	0	5	-24	-3	8	24
7353N-3	SM/DF	80	1531	0	5	-24	-3	8	24
7355N-3	SM/DF	80	1551	0	5	-24	-3	8	24
7357N-3	SM/DF	80	1571	0	5	-24	-3	8	24
7359N-3	SM/DF	80	1591	0	5	-24	-3	8	24
7361N-3	SM/DF	80	1611	0	5	-24	-3	8	24
SM = Single-mode, DF = Dual Fiber									
Contact Omnitron for RoHS (5/6) compliant models.									

Model	Type	Date Rate	Distance
7299N-RJ	Copper RJ-45	1000Mbps	100 meters
7299N-RJ-GI	Copper RJ-45	10/100/1000Mpbs	100 meters
Contact Omnitron for RoHS (5/6) compliant models.			

Omnitron Systems

800-675-8410 • 949-250-6510 • www.omnitron-systems.com • info@omnitron-systems.com • 38 Tesla, Irvine, CA USA 92618