NOVUS™ ONE L2-7 PORTABLE APPLIANCE

MULTI-RATE ETHERNET TESTING – ANYWHERE, ANYTIME

Ixia's Novus ONE is the industry's highest-density portable appliance, offering complete L2-7 network and application testing in a compact form-factor.

With Novus ONE's unique combination of portability and performance—up to 16 Dual-PHY ports per appliance, you can create cost-effective test environments for 10GE/1GE/100M Ethernet over copper and fiber media.

Novus ONE supports up to line-rate L2/3 traffic generation and analysis, high-performance routing/bridging protocol emulation, and true L4-7 application traffic generation and subscriber emulation—all with one appliance!

Novus ONE is available in two models to match your requirements and budget:

- **Novus ONE 10/1GE16DP Appliance:** A full-featured 16-port, Dual-PHY (RJ45 and SFP+) 10GE/1GE/100M appliance designed for high-density requirements.

- **Novus ONE 10/1GE8DP Appliance**: A full-featured 8-port, Dual-PHY (RJ45 and SFP+) 10GE/1GE/100M appliance designed for high-density switch testing. To support evolving test needs, users can perform a software field-upgrade to convert to a full 16-port NOVUS10/1G16DP appliance.

HIGHLIGHTS

- Cost-effectively test networks and devices with the industry's highest-density portable appliance

- Optimize lab space and power use with compact form factor and reduced power requirements

- Realize low total cost of ownership and high ROI with tri-speed 10GE/1GE/100M Dual-PHY SFP+/10GBASE-T RJ45 ports

- Enable broad test functions across L2-7 with unified architecture that supports Ixia's IxNetwork®, IxExplorer®, and IxLoad® applications

- Validate enterprise and service provider environments with appliance that is purpose-built to test high-performance, low-latency devices

Novus™ ONE 10G/1G/100M 16-port appliance

PORTABILITY AND PERFORMANCE—SMALL FOOTPRINT AND POWER

Equipped with powerful multi-core, multi-threaded network processors, Novus ONE uses Ixia's next-generation architecture designed to meet high-throughput testing needs. Due to its compact form-factor and reduced power requirements, the Novus ONE is a great option for customers that have a need for high performance testing, yet are constrained by the space and power availability in their lab.

A single Novus ONE allows emulation of up to 160Gbps of stateless and 20Gbps of stateful application traffic. The system uses inline field programmable gate arrays (FPGAs) for enhanced accuracy pertaining to latency measurements with a resolution of up to 2.5ns to deliver line-rate performance, including small 64-byte packets.

KEY FEATURES

- Full line-rate traffic generation to evaluate ASIC designs, FPGAs, and hardware switch fabrics

- High scale and performance for emulating L2/3 protocols to validate performance and scalability of routing/switching and data center test cases using the Ixia's IxNetwork application

- Support for testing SFP+ and 10GBase-T RJ-45 copper ports at different speeds simultaneously

- Industry-standard RFC tests and protocol emulation on 10G, 1G, and/or 100M ports in a single test—to benchmark data-plane and performance and scale of network equipment

- 10G, 1G, and 100M line-rate packet capture and decode tools to detect and debug data transmission errors

- Application support for IxExplorer, IxNetwork, and IxLoad applications and related Tcl and automation APIs

- Flexible 4:1 CPU and memory aggregation, for high-scale protocol emulation and performance

- Real-time latency with latency resolution of up to 2.5ns

- Extensive port and traffic flow statistics

SPECIFICATIONS[i]

PRODUCT DESCRIPTION	NOVUS ONE 10/1GE16DP 10G/1G/100M	NOVUS ONE 10/1GE8DP 10G/1G/100M[ii]
Part Number	941-0060	941-0061
Hardware Specifications		
Number of Ports	16 Tri-Speed	8 Tri-Speed
Physical Interfaces	Dual-PHY SFP+/10GBASE-T RJ-45	Dual-PHY SFP+/10GBASE-T RJ-45

PRODUCT DESCRIPTION	NOVUS ONE 10/1GE16DP 10G/1G/100M	NOVUS ONE 10/1GE8DP 10G/1G/100M[ii]
Supported Port Speeds	10Gbps, 1Gbps, and 100Mbps	
CPU and Memory	Multicore processor with 2GB of CPU memory per port pair	
Cable Media	• Fiber • CAT5e • CAT6 • CAT6A	
Appliance Dimensions	• 13.2" (W) x 3.0" (H) x 18" (D) • 335mm (W) x 76mm (H) x 457mm (D)	
Appliance Weights	• Appliance only: 27.4 lbs (12.41 kg) • Shipping: 34.5 lbs (15.65 kg)	
Temperature	• Operating: 41°F to 95°F (5°C to 35°C) • Storage: 41°F to 122°F (5°C to 50°C)	
Power	• Input voltage: 90V to 264V • Total max power: 750W	
Humidity	• Operating: 0% to 85%, non-condensing • Storage: 0% to 85%, non-condensing	
Operating System	Native IxOS	
Transmit Feature Specifications		
Transmit Engine	Wire-speed packet generation with timestamps, sequence numbers, data integrity signature, and packet group signatures	
Max. Streams per Port	512	

PRODUCT DESCRIPTION	NOVUS ONE 10/1GE16DP 10G/1G/100M	NOVUS ONE 10/1GE8DP 10G/1G/100M[ii]
Max. Streams per Port in Data Center Ethernet	256	
Stream Controls	Rate and frame size change on the fly, sequential and advanced stream scheduler	
Minimum Frame Size	10GbE: • 49 bytes at full line rate without UDF • 60 bytes at full line rate with UDF 1GbE and 100MbE: • 49 bytes at full line rate	
Maximum Frame Size	16,384 bytes	
Maximum Fame Size in Data Center Ethernet	9,216 bytes	
Priority Flow Control	• 8 line-rate-capable queues, each supporting up to 2,500-byte frame lengths • 1 queue supporting up to 9,216-byte frame lengths	
Frame Length Controls	Fixed, increment by user-defined step, weighted pairs, uniform, repeatable random, IMIX, and Quad Gaussian	
User-Defined Fields (UDF)	Fixed, increment or decrement by user-defined step, sequence, value list, and random configurations; up to five, 32-bit-wide UDFs are available	
Value Lists (Max.)	2M across 5 UDF	
Sequence (Max.)	512	
Error Generation	Generate good CRC or force bad CRC, undersize and oversize standard Ethernet frame lengths, and bad checksum	
Hardware Checksum Generation	Checksum generation and verification for IPv4, IP over IP, ICMP/GRE/TCP/UDP, L2TP, GTP	
Link Fault Signaling	10GE: Reports, no fault, remote fault, and local fault port statistics; ability to select the option to have the transmit port ignore link faults from a remote link partner	

PRODUCT DESCRIPTION	NOVUS ONE 10/1GE16DP 10G/1G/100M	NOVUS ONE 10/1GE8DP 10G/1G/100M[ii]
Latency Measurement Resolution	2.5 nanoseconds	
Transmit Line Clock Adjustment	Ability to adjust the parts-per-million line frequency over a range of -100 ppm to +100 ppm across all ports on the appliance	
Receive Feature Specifications		
Receive Engine	Wire-speed packet filtering, capturing, real-time latency, and inter-arrival time for each packet group, with data integrity, sequence and advanced sequence checking capability	
Trackable Receive Flows per Port	1M without Tx/Rx Sync and sequence checking 512k with Tx/Rx Sync and sequence checking	
Minimum Frame Size	64 bytes at full line rate into the capture buffer 49 bytes at less than full line rate	
Filters (User-Defined Statistics, UDS)	2 SA/DA pattern matchers, 2x16-byte user-definable patterns with offsets capability for start of: frame, IP, or protocol; up to 6 UDS counters are available	
Hardware Capture Buffer	512MB per port	
Statistics and Rates	Link state, line speed, frames sent, valid frames received, bytes sent/received, fragments, undersize, oversize, CRC errors, VLAN tagged frames, 6 user-defined stats, capture trigger (UDS 3), capture filter (UDS 4), 8 QoS counters, data integrity frames, data integrity errors, sequence and advanced sequence checking frames, sequence checking errors, ARP, and PING requests and replies	
Latency/Jitter Measurements	Cut-through, store & forward, forwarding delay, up to 16 time bins latency/jitter, MEF jitter, and inter-arrival time	
Layer 2-3 Protocol Support		
Routing and Switching	BGP4/BGP4+, OSPFv2/v3, ISISv4/v6, EIGRP/EIGRPv6, RIP/RIPng, BFD, IGMP/MLD, PIM-SM/SSM, STP/RSTP/MSTP, PVST+/RPVST+, Link Aggregation (LACP), LISP	
Software Defined Network	OpenFlow, Segment Routing, BGP Link State (BGP-LS), PCEP, VXLAN, EVPN VXLAN, OVSDB, GENEVE	

PRODUCT DESCRIPTION	NOVUS ONE 10/1GE16DP 10G/1G/100M	NOVUS ONE 10/1GE8DP 10G/1G/100M[ii]
MPLS	RSVP-TE P2P/P2MP, LDP/LDPv6/mLDP, LDP L2VPN (PWE/VPLS), BGP VPLS, L3VPN/6VPE, 6PE, BGP RFC3107, MPLS-TP, MPLS OAM, EVPN/PBB-EVPN, Multicast VPN Rosen Draft, NG Multicast VPN	
Broadband and Authentication	PPPoX/L2TPv2, DHCPv4/DHCPv6, ANCP, IPv6 Autoconfiguration (SLAAC), IGMP/MLD, IPTV, 802.1x, WebAuth, EAPoUDP, Cisco NAC	
Industrial Ethernet	Link OAM (IEEE 802.3ah), CFM/Y.1731, PBB/PBB-TE, ELMI, TWAMP, Sync-E ESMC, IEEE 1588v2 (PTP), gPTP (IEEE 802.1AS), MSRP (IEEE 802.1 Qat), IEEE 1722	
Data Center Ethernet	DCBX/LLDP, FCoE/FIP, PFC (IEEE 802.1Qbb), TRILL, Cisco FabricPath, SPBM, VEPA	
Layer 4-7 Application Traffic Testing Support		
Data	HTTP, HTTPS, TCP Session, FTP, DNS, Mail (SMTP, POP3, and IMAP),TFTP, AppReplay, AppLibrary	
Video	RTSP, IPTV, VoD, Adobe Flash Client, Apple HLS Client, Microsoft Silverlight Client, Adobe HDS Client, DASH Client; includes Video Quality VQMON and TCP Video Quality	
Voice	Advanced VoIP SIP & RTP, Audio & Video Codecs, VoLTE, MSRP, Telepresence, SMS, T.38; includes: Voice Quality and Video Quality for conversational video traffic	
Storage	iSCSI, CIFSv1, CIFSv2 (SMB2), SMB3, NFSv3 Client, NFSv4 Client, NFS4.1 Client, Cloud Storage Client	
Access	IPv4, IPv6, VLAN, Emulated Routers, DNS, DHCP	

ORDERING INFORMATION

APPLIANCES

941-0060

Novus ONE 10/1GE16DP Appliance (NOVUS10/1GE16DP), 16-port, SFP+/10GBASE-T Dual-PHY 10GE/1GE/100M Appliance, 1-slot Dual-PHY with 16-ports each of the SFP+ and 10GBASE-T RJ45 physical interfaces with L2-7 support.[iii]
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941-0061

Novus ONE 10/1GE8DP Appliance, 8-port, SFP+/10GBASE-T Dual-PHY 10GE/1GE/100M Appliance, 1-slot Dual-PHY with 8-ports each of the SFP+ and 10GBASE-T RJ45 physical interfaces enabled on the 16-port appliance with L2-7 support. Note1: The 8-port appliance may be upgraded in the field to a 16-port appliance by purchasing the additional 8-port enablement upgrade (905-1006). Note2: For the additional 8-port upgrade purchase please provide the serial number of the desired appliance to install the option on at the time of order placement.[iii]

PORT UPGRADE OPTION

905-1006

NOVUS10/1GE/100M-UPGRADE, additional 8-port enablement for FIELD UPGRADE for NOVUS10/1GE16DP, 8-port enabled load module (944-1143) and the 8-port enabled Novus One appliance (941-0061). Note1. This creates a total of 16-ports enabled on the load module or appliance. Note2: For the additional 8-port upgrade purchase please provide the serial number of the desired load module or appliance to install the option on at the time of order placement.

CABLES & TRANSCEIVERS

988-0011

SFP+10GBASE-SR/SW and 1000BASE-SX Dual-Rate pluggable optical transceiver for 10/1 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, 850nm. Compatible with all 10/1 Gigabit Ethernet Novus, PerfectStorm and Firestorm load modules and appliances. Note: Multi-mode fiber LC-LC, 3 meter cable included.

988-0012

SFP+10GBASE-LR/LW and 1000BASE-LX Dual-Rate pluggable optical transceiver for 10/1 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, 1310nm, 10km reach. Compatible with all 10/1 Gigabit Ethernet Novus, PerfectStorm and Firestorm load modules and appliances. Note: Single-mode fiber LC-LC, 10 ft. cable included.

948-0013

SFP+10GBASE-SR/SW, Accessory, SFP+ Transceiver for 10 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, 850nm; Operates with 944-0050 (LSM10GXM4S-01), 944-0051 (LSM10GXM8S-01), 944-0052 (LSM10GXMR4S-01), 944-0053 (LSM10GXMR8S-01), 944-0054 (LSM10GXM2S-01), 944-0055 (LSM10GXMR2S-01); and 944-0022 (LSM10G1-01) with 948-0012 (SFP+ADAP-01); or 944-0024 (LSM10GL1-01) with 948-0012 (SFP+ADAP-01).

948-0014

SFP+10GBASE-LR/LW, Accessory, SFP+ Transceiver for 10 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, 1310nm; Operates with 944-0050 (LSM10GXM4S-01), 944-0051 (LSM10GXM8S-01), 944-0052 (LSM10GXMR4S-01), 944-0053 (LSM10GXMR8S-01), 944-0054 (LSM10GXM2S-01), 944-0055 (LSM10GXMR2S-01); and 944-0022 (LSM10G1-01) with 948-0012 (SFP+ADAP-01); or 944-0024 (LSM10GL1-01) with 948-0012 (SFP+ADAP-01).

948-0015

SFP+10GBASE-LRM, Accessory, SFP+ Transceiver for 10 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, For multimode fiber, 1310nm; Operates with 944-0050 (LSM10GXM4S-01), 944-0051 (LSM10GXM8S-01), 944-0052 (LSM10GXMR4S-01), 944-0053 (LSM10GXMR8S-01), 944-0054 (LSM10GXM2S-01), 944-0055 (LSM10GXMR2S-01); and 944-0022 (LSM10G1-01) with 948-0012 (SFP+ADAP-01); or 944-0024 (LSM10GL1-01) with 948-0012 (SFP+ADAP-01); NOTE: SFP+10GBASE-LRM does not support the 10GbE WAN mode in any of the load modules listed above.

948-0016

SFP+10GSFP+Cu, Accessory, passive, copper Direct Attach Cable Assembly for 10 Gigabit Ethernet LAN/WAN load modules with pluggable SFP+ interface, 3 meter length; NGY 10GE SFP+ modules, Xdensity modules, and Xcellon-Flex 10GE SFP+ FE and AP modules.

SFP-LX

SFP 1 Gigabit Ethernet Transceiver - 1310nm LX

SFP-SX

SFP 1 Gigabit Transceiver - 850nm SX

SFP-FX-100M-XCVR

SFP 100BASE-FX 100M pluggable optical transceiver, MMF (multimode), 1310nm, 2km reach

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[i] Specifications subject to change without notice.
[ii] 8-port Novus10/1GE8DP appliance can be upgraded to full 16-port version NOVUS10/1GE16DP appliance via 905-1006 additional 8-port enablement option.

[iii] Product photograph shows optional SFP+ transceivers installed. These are available for purchase separately.