NPT 1012D

Managed Packet Transport Edge Device

The NPT 1012D is an extremely compact packet transport edge device in a hardened DIN-rail form factor optimized for remote locations with strict environmental and size requirements. When used in a rack rather than a DIN-rail, a special 19" rack adapter allows 2 NPT 1012Ds to be mounted side-by-side.

Using Ribbon's industry proven IP Wave rNOS operating system it provides support for Ethernet, MPLS, and PON and up to 32 Gbps switching capacity. The IP Wave rNOS streamlines end-to-end metro service delivery by combining carrier-grade service assurance, visibility, and control with packet efficiency and multiservice solution.
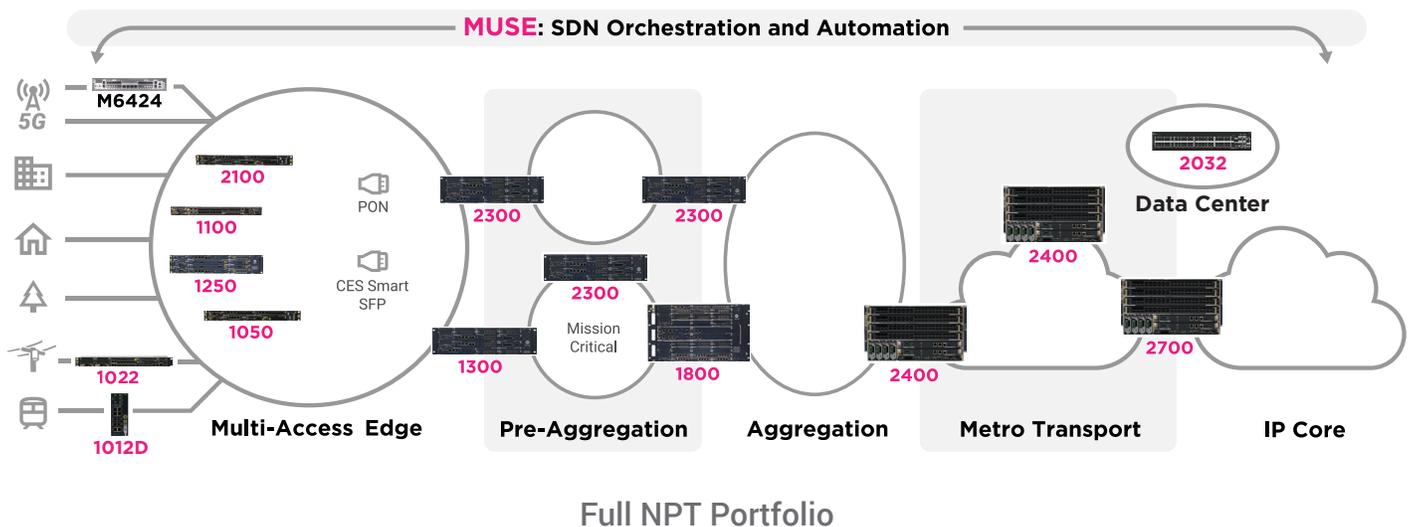
With such a rich and robust feature set NPT 1012D is well suited for a wide variety of applications and networking scenarios. These include a gateway for mission-critical services, wholesale service delivery, and business VPN connectivity services.

As with all of Ribbon's NPT portfolio, NPT-1012 is powered by Ribbon's IP Wave rNOS operating system and is managed by Ribbon's Muse™ software suite.

NPT 1012D Key Product Highlights

- Hardened DIN Rail switch
- Uses Ribbon's industry proven IP Wave rNOS operating system
- Multi-access Edge supporting Ethernet, XGS-PON, EPON
- Optimized IP Routing and Packet Transport with support for MPLS-TP, IP-MPLS and Segment Routing
- Low Power NPT 1012D - 60W

Full NPT Portfolio

Key NPT 1012D Product Specifications

Platform

Description	Specification
CPU	• 4-cores PPC
Memory	• 4G DDR4 DRAM
Storage	• 32GB eMMC
Traffic Interfaces	• 4 x 10/1GE (SFP+) • 4 x 100/1000 Base-T (RJ45)
Control and management interfaces	• USB (For SW installation and ZTI) • LCT/CLI (10/100/1000Base-T) • Console (RS232) • Alarm in/out (dry contact)
Performance	• 32Gbps
Power Supplies	• 1+1 DC input redundancy
Cooling	• 2 Fans • Airflow − Down to Up

Timing	• SyncE with ESMC
	• 1588v2
	• Built-in GNSS receiver
	• External timing 1PPS and TOD
	• Internal stratum 3 clock (holdover state)
	• Primary and secondary sources (supports SSM bits)
	• ACR, DCR
	• Loop timing on SAToP, and SNTP
	• Supported profiles :
	   • G.8262.1, G.8275.1, G.8275.2
	   • G.8273.2 - class C

Physical Specification	• H x W x D: 75 x 127.8 x 151 mm (DIN-rail compliant) • Weight : 3.50Kg

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Multi-access Capabilities

Description	Specification

L2/L3 VPN Sevices	• L2VPN - MEF 3.0 (IP-MPLS and MPLS-TP)
	  • E-Line
	  • E-LAN
	  • E-Tree
	  • E-Access
	• Ethernet Virtual Private Network (EVPN)
	  • Virtual Private Wire Service (EVPN-VPWS, EVPN-ELINE)
	  • Virtual Private LAN Services (EVPN-VPLS, EVPN-ELAN)
	  • Anycast IRB with IPv4 and IPv6 support
	  • Multihoming – Active-Active, Single-Flow-Active, Port-Active
	  • PW Virtual Ethernet Segment
	• L3VPN
	  • IPv4 VRF
	  • 6VPE
	• IRB, PHT

IP Over DWDM	• Colored C/DWDM • Tunable G.709
TDM Services	• Circuit Emulation Services (CES) • SAToP • CEP
TDM Pluggables	• 4x E1/T1 (per smart SFP) • 4 x STM-16/OC-48 (per smart SFP)
PON Pluggables	• Smart SFP 10G XGS-PON - 10G SFP+ OLT optics modules

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Software features provided by the Ribbon IP Wave rNOS

Description	Specification
Layer 2	• Layer 2 forwarding and bridging • Bridge Domains (BD) • Flexible VLAN-Tagging • IEEE 802.1Q VLANs and Q-in-Q • Ethernet Link Aggregation Group (LAG) • Link Aggregation Control Protocol (LACP) 802.3ad • G.8032 • Spanning Tree Protocol • Jumbo frames on all ports
Layer 3	• IPv4 and IPv6 unicast routing • Layer 3 interfaces: physical interfaces and logical interfaces (Units). • Virtual Routing and Forwarding (VRF) • Open Shortest Path First (OSPFv2, OSPFv3) • Intermediate System to Intermediate System (ISIS) • Multiprotocol Border Gateway Protocol (MP-BGP) • Equal-Cost Multipath (ECMP) • Bidirectional Forwarding Detection (BFD), MH-BFD • Virtual Router Redundancy Protocol (VRRP) • Integrated Routing Bridging (IRB), Anycast IRB • Pseudowire Headend Termination (PHT)
MPLS	• Label switching (LER, LSR) • Label Distribution Protocol (LDP) • BGP Labeled Unicast (BGP-LU) • MPLS-TP • MPLS Traffic Engineering with RSVP-TE, SR-TE • Point-to-point L2VPN – Static, T-LDP, EVPN-VPWS • Multipoint L2VPN – VPLS, EVPN • EVPN with Anycast IRB • 6VPE • IP Loop-Free Alternate (LFA) Fast Reroute (FRR) • RSVP-TE Fast Reroute (FRR) and Path-Protection

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Software features provided by the Ribbon IP Wave rNOS (continued)

Description	Specification

Segment Routing (SR)	• SR-MPLS
	• ISIS, OSPF, BGP extensions to segment routing
	• TI-LFA
	• Segment Routing Traffic Engineering (SR-TE, SR Policies)
	    • PCE, PCC initiated SR Policies
	    • Path Protection
	    • TI-LFA Local Repair Protection
	    • Anycast SID
	    • Binding SID
	• SR, SR-TE OAM
	• Flexible Algorithm
	• BGP Color Extended Community

Multicast	• IPv4 and IPv6 Multicast Routing • PIM-SM, PIM-SSM, PIM-ASM • IGMPv3, MLDv2 • MSDP • Anycast RP • BGP IPv4 Multicast
Quality of Service (QoS)	• Class-based 3-level Hierarchical QoS • Virtual Output Queueing (VOQ) • Policing, Shaping • Multi-level priority queuing • Classification based on L2/L3/L4 fields • Remarking • Weighted Random Early Detection (WRED) • Deep packet buffer

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Software features provided by the Ribbon IP Wave rNOS (continued)

Description	Specification
OAM	• Ethernet OAM - IEEE802.3ah, IEEE 802.1ag and ITU-T Y.1731 PM • IP OAM - BFD, Ping, Trace-route, TWAMP • MPLS-TP OAM - G8113.2, RFC5860, BFD • MPLS OAM – Ping/Traceroute MPLS • RFC 2544 Generator, Y.1564 • LLDP • DHCP Relay • Streaming Telemetry • sFlow • Link Delay-Measurement
Security	• Control-plane and management plane protection • Authentication, Authorization, and Accounting (AAA) • RADIUS • Terminal Access Controller Access-Control System Plus (TACACS+) • Secure Shell (SSH) • Layer 2 and Layer 3 ingress Firewall filters (ACL) • Unicast Reverse Path Forwarding (Unicast RPF) • IEEE802.1x
Manageability	• CLI • LCT • SNMP MIB • NETCONF/gRPC - XML, JSON, GPB • YANG models - OpenConfig, IETF • Muse software suite (SDN orchestration and control) • LightSOFT® NMS • Zero-Touch Provisioning (ZTP)

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Environmental

Description	Specification
Operating environment and altitude	• -25°C to +65°C (-13°F to 149°F)
Operating Humidity	• 5% to 95%
Altitude	• Up to 4000 m
Acoustics	• NEBS GR-63-CORE
Power input	• -20VDC to -72VDC or +20VDC to +70VDC
Power dissipation	• 60W

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Standards compliance

Description	Specification
Regulatory	• Products should comply with CE markings according to directives 2014/30/EC and 2014/35/EC
NEBS	• Certified with GR-63, GR-1089 and GR-3160
Safety	• IEC 62368-1 • UL 62368-1 • IEC 60825-1 for lasers • IEC 60825-2 for lasers
EMS Standards	• FCC CFR 47 Part 15 Subpart B ANSI C63.4 • IEC 61850-3 • IEEE 1613 • ETSI EN 50121-4 • IEC 62236-4 • FTZ 1TR9
EMC Immunity	• ETSI EN 300 386 • IEC 61000-4 series
ETSI	• ETSI EN 300 019 - Storage: Class 1.1, Transportation: Class 2.3, In-Use/Operational: Class 3.1 • QM 333 • ETSI EN 300 753
RoHS	• Compliance per EU RoHS, RoHS 2 directive 2011/65/EU and amendment 2015/863/EU directives.

Contact Us   We are here to help. Contact us about our IP Wave solutions.

About Ribbon

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon, please visit rbbn.com.

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