

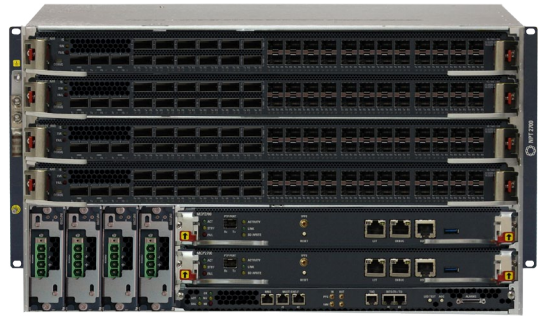


NPT 2700 – XDR Router Family

High Performance Multiservice Metro Router



The NPT 2700 is a high performance, high-capacity multiservice router optimized for high-capacity metro aggregation and transport. With support for IP/MPLS, SR-TE, FlexE and IPoDWDM the NPT 2700 uses the right IP transport technology for each service it supports. A unique “pay as you grow” architecture, allows switching capacity to be added dynamically when needed. Scalable capacity and a fully redundant design make the NPT 2700 a perfect for all networks requiring a scalable high availability networking solution.



The NPT 2700 provides a unique “pay-as-you-grow” architecture, with up to 8T switching capacity which can be built-up dynamically in steps of 2T, without the need to install the full switching capacity of 8T upfront, as is the case in traditional high capacity platforms based on Clos architecture. A choice of I/O slots, and optical transceivers (including 100G , 200G and 400G coherent interfaces with ZR/ZR+ applications) make the NPT 2700 ideal for high-capacity metro aggregation and transport.

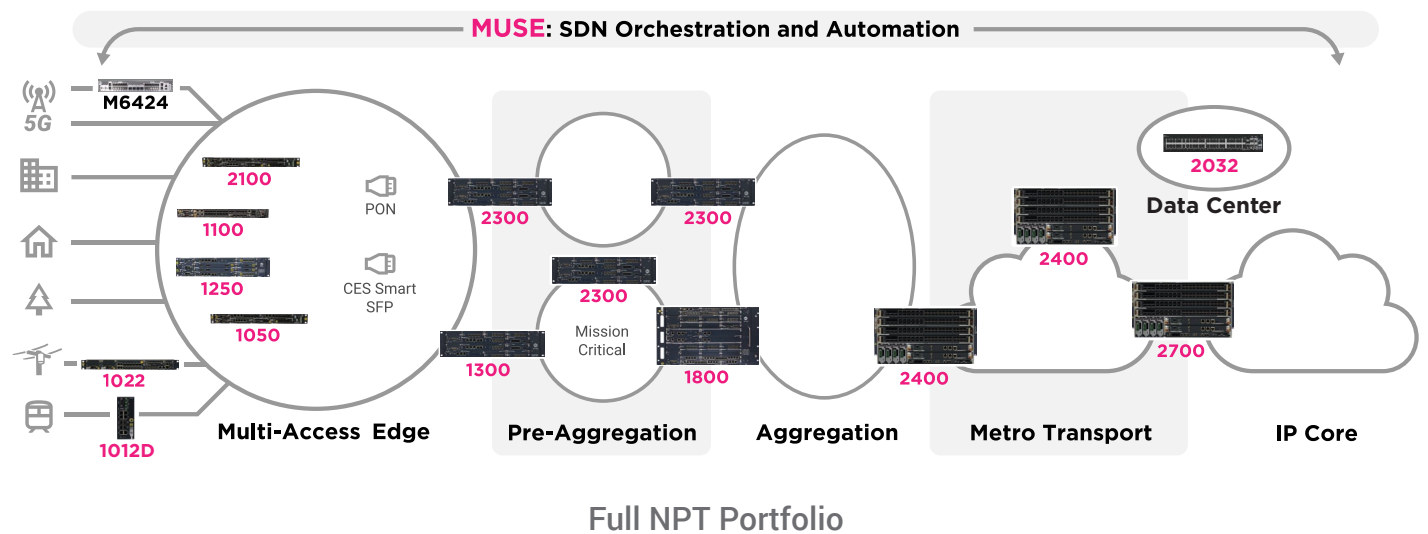
With a rich set of IP routing features and capabilities combined with carrier-grade service assurance, visibility, and control the NPT 2700 is truly multiservice, optimizing the end-to-end delivery of each service whilst meeting the service performance requirements for each service, on a service by service basis. A full set of optical interfaces including 400G ZR/ZR+ coherent optical pluggables, allows the NPT 2700 to support both single layer, hop-by-hop IPoDWDM and multilayer IP and Optical transport.

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The NPT 2700 is purpose built to support the new highly stringent service performance requirements required by 5G and cloud services and applications. The hardware is designed to support ultra low latency services, and provide the accurate timing required by these services and Flex E can be used to provide network slicing, giving the service separation required to guarantee strict SLA and KPI for each network slice.

NPT 2700 Key Product Highlights

- Compact 7RU platform with modular architecture
- Full redundancy for high resiliency (switch/control/power/fan)
- 8T capacity with Unique “pay as you grow design”
- Up to 6.4T FlexE capacity capability providing network slicing
- 2T packet switching capacity per card
- Flexible port assignment up to 2T per card (mix of low and high rates)
- Versatile Ethernet interface options: 1G/10G/25G/50G/100G/200G/400G
- Low-latency forwarding
- Rich quality-of-service capabilities for different SLAs
- Supports IPoDWDM and IPoOTN with 400G/100G ZR/ZR+ optics
- Precise frequency and phase/time synchronization using the latest industry standards – G.8273.2 Class C compliant
- Open NE with NETCONF/YANG for 3rd Party Management
- Advanced Management Capabilities provided by Muse Software



Key NPT 2700 Product Specifications

Platform

Description	Specification
CPU	Intel x86 8-Core/2.2GHz Core
Memory	32G DRAM
Storage	128GB
Traffic Ports	<ul style="list-style-type: none"> • 8 x 400G • 12 x 200G • 80 x 100G • 320 x 25G • 336 x 1G/10GG
Performanc	Switch capacity: 4000Mpps
Power Supplies	4 Hot swappable with 1+1/2+2 redundancy
Cooling	<ul style="list-style-type: none"> • 9 Fan wih 8+1 redundancy • Air flow - Front to back
Timing	<ul style="list-style-type: none"> • SyncE with ESMC • 1588v2 • External timing 1PPS and ToD • Internal stratum 3E clock (holdover state) • Primary and secondary sources (support SSM bits) • ACR, DCR • Loop timing on SAToP, TDM bits (T3/T4), and SNTP • G.8262.1, G.8275.1, G.8275.2 • G.8273.2 - Class C
Physical Specification	<ul style="list-style-type: none"> • 7RU • Dimension: <ul style="list-style-type: none"> • 448 mm (W) x 700 mm (D) x 307mm (H) • 17.6" (W) x 27.6" (D) x 12.1" (H) • Weight: chassis, 40kg, IO Card, 7kg

Multi-access Edge Capabilities

Description	Specification
L2/L3 VPN Services	<ul style="list-style-type: none"> • L2VPN - MEF 3.0 <ul style="list-style-type: none"> • E-Line • E-LAN • E-Tree • E-Access • Ethernet Virtual Private Network (EVPN) <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • IPv4 VRF • 6VPE • IRB, PHT
IP over DWDM	<ul style="list-style-type: none"> • CWDM • DWDM • 100G, 200G, 400G coherent interfaces • ZR and OPENZ+ application • QSFP_DD for 100/200/400G
TDM Services	<ul style="list-style-type: none"> • Circuit Emulation Services (CES) <ul style="list-style-type: none"> • SAToP • CESoPSN • CEP
TDM Pluggables	<ul style="list-style-type: none"> • E1/T1 • E3/DS3 • STM-1/OC-4 • SYM-16/OC-48
TDM Interfaces	<ul style="list-style-type: none"> • Max. Interfaces: <ul style="list-style-type: none"> • 48 x E1/T1 • 48 x DS3 • 48 x STM-1/OC-3 • 48 x STM-4/OC-12 • 48 x STM-16/OC-48
PON Pluggables	Smart SFP 10G XGS-PON - 10G SFP+ OLT Optics modules

Software features provided by the NPT's IP-Wave rNOS

Description	Specification
Layer 2	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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
Segment Routing (SR)	<ul style="list-style-type: none"> • SR-MPLS • ISIS, OSPF, BGP extensions to segment routing • TI-LFA • Segment Routing Traffic Engineering (SR-TE, SR Policies) <ul style="list-style-type: none"> • 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

Software features provided by the NPT's IP-Wave rNOS (continued)

Description	Specification
Multicast	<ul style="list-style-type: none"> • IPv4 and IPv6 Multicast Routing • PIM-SM, PIM-SSM, PIM-ASM • IGPv3, MLDv2 • MSDP • Anycast RP • BGP IPv4 Multicast
Quality of Service (QoS)	<ul style="list-style-type: none"> • Class-based 3-level Hierarchical QoS • Virtual Output Queuing (VOQ) • Policing, Shaping • Multi-level priority queuing • Classification based on L2/L3/L4 fields • Remarking • Weighted Random Early Detection (WRED) • Deep packet buffer
OAM	<ul style="list-style-type: none"> • Ethernet OAM <ul style="list-style-type: none"> • IDDD802.3ah • IEEE 802.3ah • ITU-T Y.1731 PM • IP OAM <ul style="list-style-type: none"> • BFD • Ping • Trace-route • TWAMP • MPLS-TP OAM - Ping/Traceroute • Y.1564 • LLDP • DHCP Relay • Steaming Telemetry • sFlow • Link Delay-Measurement
Security	<ul style="list-style-type: none"> • Authentication, Authorization, and Accounting (AAA) • RADIUS • Terminal Access Controller Access-Control System Plus (TACACS+) • SSH, TLS, SFTP • SSH 2 SW integrity checking (SHA-2) • Access Control List (ACL) • IEEE802.1x - port authentication • x.509 digital certificate • Control channel HMAC-256 • Private and Public key authentication • Port blocked by default • uRPF

Software features provided by the NPT's IP-Wave rNOS (continued)

Description	Specification
SDN	SR-TE LSPs, RSVP-TE LSPs <ul style="list-style-type: none"> • PCC initialized, PCC controlled • PCC initialized, PCE computed • PCC initialized, PCC controlled SR-TE LSPs <ul style="list-style-type: none"> • PCE initialized, PCE controlled Topology discovery <ul style="list-style-type: none"> • BGP-Link State (BGP-LS) IPv4 Telemetry <ul style="list-style-type: none"> • Streaming interface statistics • Service delay and jitter metrics Netflow/cflowd
Manageability	<ul style="list-style-type: none"> • CLI • LCT • SNMP MIB • NETCONF/gRPC - XML, JSON, GPB • YANG models - OpenConfig, IETF • Muse software suite (SDN orchestration and control) • LightSOFT® NMS

Environmental

Description	Specification
Operating Environment	-5°C to +50°C (23°F to 122°F)
Operating Humidity	5% to 95%
Altitude	Up to 4000 m
Acoustics	NEBS GR-63-CORE
Power Input	-48Vdc nominal (+/-15% range)
Power Dissipation	Typical: 1800W

Standards compliance

Description	Specification
Regulatory	<ul style="list-style-type: none"> • Products comply with CE markings according to directives 2014/30/CE and 2014/35/CE • VCCI - A
NEBS	Designed to meet GR-63, GR-1089 and GR-3160
Safety	<ul style="list-style-type: none"> • IEC 62368-1:2014 (2nd ed) • EN 62368-1:2014 (2n ed) + A11:2017 • UL 62368 • IEC 60825-1:2014 • IEC 60825-2:2004
EMS Standards	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • ETSI EN 300 386 • IEC 61000-4 series
ETSI/Environmental	<ul style="list-style-type: none"> • ETSI EN 300 019 <ul style="list-style-type: none"> • 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 directive

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.