

Neptune 2300

High Performance Multiservice Aggregation Router

The Neptune 2300 is a compact, modular, high-capacity, aggregation router designed to provide aggregation for services, applications and architectures requiring a high-capacity, high-performance multiservice solution. With support for IP/MPLS, MPLS-TP, SR-TE, and IPoDWDM Neptune 2300 uses the right IP transport technology for each service it supports. With a modular architecture and unique in-service extensions the Neptune 2300 allow cost-effectively scale to meet any service mix.

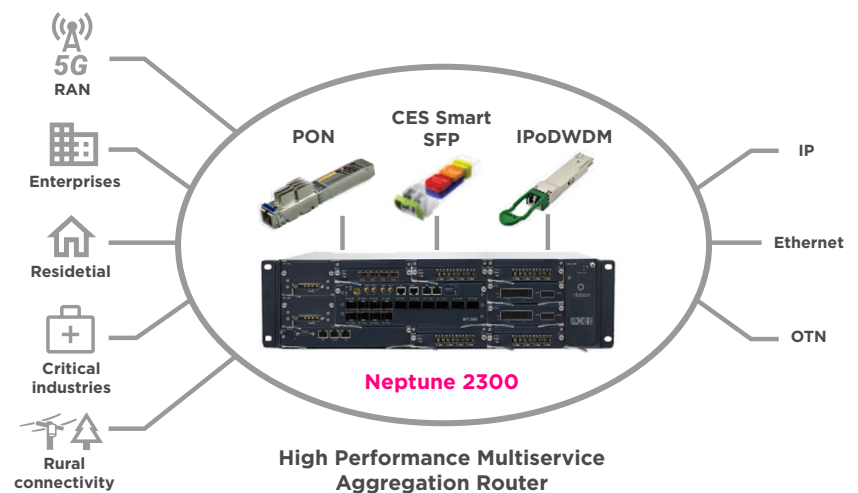


In base configuration the Neptune 2300 provides upto 1.4T capacity @1000Mpps and supports 10M/100M 1G/10G/25G/50F/100G/200G and 400G interfaces in a 3RU form factor. This can be extended to 3T fan-out and 2.4T switching capacity with the addition of service cards.

With an extensive set of interfaces for multiple access technologies such as Ethernet, MPLS, PON and legacy TDM, and redundancy of fans and input power the Neptune 2300 is a perfect fit for networks requiring high capacity, high availability multiservice access edge and aggregation capabilities. With a full set IP/MPLS, segment routing and MPLS-TP transport capabilities, the Neptune 2300 can efficiently aggregate and route the services over the network, meeting their service performance needs (SLAs) on a service by service basis. A full set of optical interfaces including 400G ZR/ZR+ coherent optical pluggables, allows the Neptune 2300 to support both single layer, hop-by-hop IPoDWDM and multilayer IP and Optical transport. The operator can choose which approach best meets their needs, or they can run both in a hybrid approach.

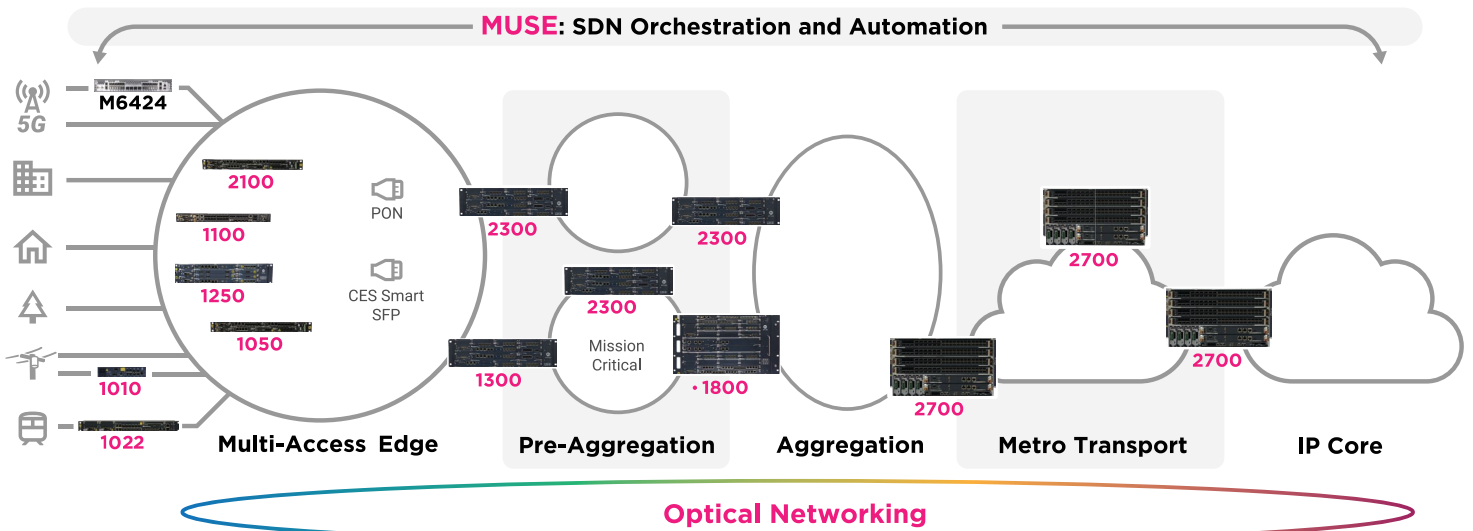
With such a rich and robust feature-set, Neptune 2300 is well suited for a wide variety of applications and networking scenarios, these include;

- 5G Hub router: with 5G specific functionality including, Class C timing, Segment Routing, Flex- Algo, EVPN and 5G interfaces
- Mission critical applications and networks: With high availability and support for deterministic packet transport with MLPS-TP, segment routing and RSVP-TE
- Aggregation for Broadband services: providing a full set of IP/MPLS capabilities providing optimized service-aware support for voice, video, and data services
- Aggregation for Business services: a full range of Ethernet interfaces and full set of IP protocols such as EVPN and segment routing ensure services are transported to meet the SLA's on a per service basis
- PON in-fill: with a 10GSFP+ OLT Optics pluggable module providing XGS-PON/EPON connectivity supporting up to 128 ONUs per OLT
- TDM migration: supporting voice trunk and legacy service migration with circuit emulation services (CES) mapping a full range of legacy TDM interface speeds onto the packet switched network (PSN)



Neptune 2300 Key Product Highlights

- Multi-service aggregation supporting Ethernet, XGS-PON, EPON, SDH and SONET, SCADA and PCM
- 3RU small form factor with a 300mm depth
- Optional 2U expansion shelves for increased fan-out and optical amplification
- Versatile Ethernet interface options: 10/100Mbps 1/10/25/100/200G/400G
- MEF 3.0 Compliant
- Low-latency forwarding,
- Rich quality-of-service capabilities for different SLAs
- Precise frequency and phase/time synchronization using the latest industry standards – G.8273.2 Class C compliant
- Supports IPoDWDM and IPoOTN with 400G/100G ZR/ZR+ optics
- Open NE for 3rd Party Management
- Advanced Management Capabilities provided by Muse Software



Key Neptune 2300 Product Specifications

Platform

Description	Specification
CPU	<ul style="list-style-type: none"> Intel x86 8-Core / 2.2GHz Core
Memory	<ul style="list-style-type: none"> 32G DRAM
Storage	<ul style="list-style-type: none"> 1x 128GB
Interfaces	<ul style="list-style-type: none"> 4 x 400G 13 x 200G 30 x 100G 96 x 25G 96 x 10G 148 x GE ports (CSFP)
Performance	<ul style="list-style-type: none"> Switch capacity: 1000Mpps
Power Supplies	<ul style="list-style-type: none"> 2 hot swappable with 1+1 redundancy
Cooling	<ul style="list-style-type: none"> 6 fans with 5+1 redundancy, Airflow – right to left
Timing	<ul style="list-style-type: none"> SyncE with ESMC 1588v2 GNSS receiver External timing 1PPS and TOD Internal stratum 3E clock (holdover state) Primary and secondary sources (supports SSM bits) ACR, DCR Loop timing on SAToP, TDM bits (T3/ T4), and SNTP G.8262.1, G.8275.1 G.8273.2 – class C
Physical Specification	<ul style="list-style-type: none"> 3RU Dimensions <ul style="list-style-type: none"> 465mm(W) x 243 mm(D) x 132mm(H) 18.3"(W) x 9.6" (D) x): 3.5" (H) Weight: chassis, 9.4kg

Multi-access Edge Capabilities

Description	Specification
L2/L3 VPN Services	<ul style="list-style-type: none"> • L2VPN - MEF 3.0 (IP-MPLS and MPLS-TP) <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, • Amplifiers • 100G, 200G, 400G coherent interfaces • ZR and OPENZR+ application • CFP2 DCO for 100G/200G • 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 • STM-16/OC-48
TDM Interfaces	<ul style="list-style-type: none"> • Max. Interfaces: <ul style="list-style-type: none"> • 224 x E1/T1 • 168 x DS3 • 28 x STM-1/OC-3 • 7 x STM-4/OC-12 • 64 x STM-16/OC-48
PON Pluggables	Smart SFP 10G XGS-PON - 10G SFP+ OLT optics modules

Software features provided by the Neptune'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 Neptune'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 • IGMPv3, 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"> • IEEE802.3ah • IEEE 802.1ag • ITU-T Y.1731 PM • IP OAM <ul style="list-style-type: none"> • BFD • Ping • Trace-route • TWAMP • MPLS-TP OAM - G8113.2, RFC5860, BFD • MPLS OAM – Ping/Traceroute MPLS • Y.1564 • ZTP • LLDP • DHCP Relay • Streaming 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 • MACsec • uRPF

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

Description	Specification
SDN	<ul style="list-style-type: none"> • SR-TE LSPs, RSVP-TE LSPs <ul style="list-style-type: none"> • PCC initialized, PCC controlled • PCC initialized, PCE computed • PCC initialized, PCE 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 • Zero-Touch Provisioning (ZTP)

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 over Ethernet (PoE+)	Up to 30W
Power input	-48Vdc nominal (+/-15% range)
Power dissipation	Typical: 500W

Standards compliance

Description	Specification
Regulatory	<ul style="list-style-type: none"> • Products comply with CE markings according to directives 2014/30/EC and 2014/35/E • 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 (2nd 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	<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 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.