NPT 2714 Family – XDR Router Series

Fully Redundant Aggregation Router

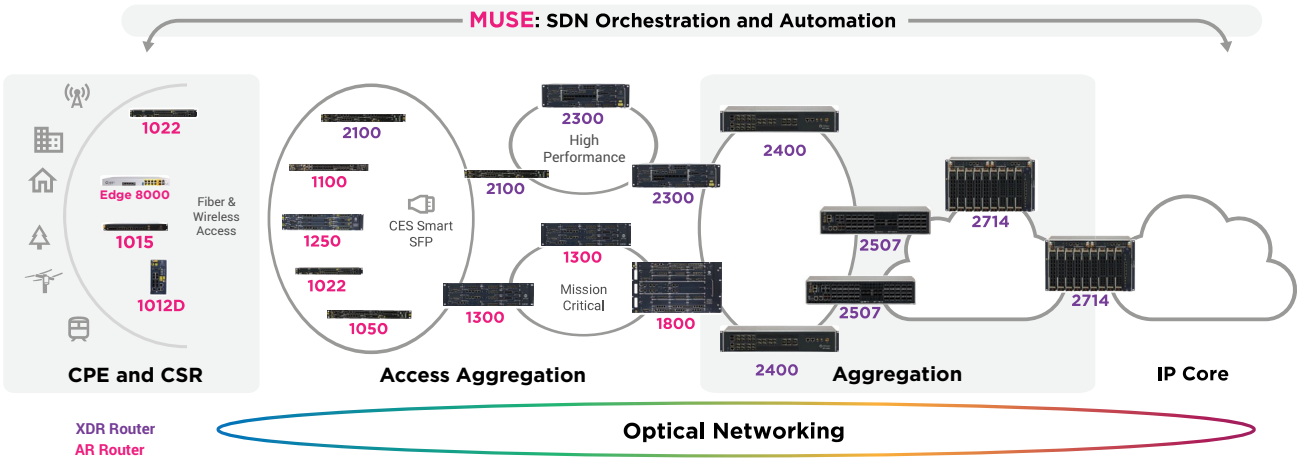
The NPT 2714 is high-capacity, high-performance, fully redundant aggregation router, designed to provide aggregation and transport for services, applications and architectures requiring a performance/ cost optimized multiservice aggregation solution. The NPT 2714 has two variants:

- NPT 2714 A –supports IP/MPLS and MPLS-TP and provides coherent routing (IPoDWDM) with a full set of optical interfaces including 400G ZR/ZR+ coherent optical pluggables
- NPT 2714 AR - supports IP/MPLS only and does not provide IPoDWDM

Innovative physical design allows the NPT 2714 to be seamlessly upgrade from 7.2 Tbps switching capacity to up to 14.4 Tbps within a 6RU form factor, providing operators with true pay-as-you-grow scalability. With an extensive set of interfaces ranging from 10G to 400G, and the 2714A variant supporting up to 36x400G or up to 144x100G coherent optical interfaces, the NPT 2714 family is ideal for networks requiring high capacity and high availability multiservice aggregation.

Ribbon's IPWave rNOS, is a field hardened, industry proven Network Operating System (NOS) that offers a comprehensive suite of features and capabilities; including a full range of routing protocols, rich QoS capabilities, a network slicing toolkit, and comprehensive carrier-grade service assurance and OAM functionalities. This enables the NPT 2714 to efficiently aggregate and route traffic to meet service performance requirements (SLAs) on a service-by-service basis. With these robust capabilities, the NPT 2714 is exceptionally well-suited for a wide variety of applications and networking scenarios, including:

- **5G Aggregation** providing 5G-specific functionality, including Class C timing, Segment Routing, Flex-Algo, EVPN, and 5G interfaces
- **Broadband Backhaul**, providing high capacity, high performance and high scale routing, a full set of IP/MPLS capabilities, and optimized service-aware support for voice, video, and data services and with high capacity,
- **Business Services Backhaul**, offering a full range of Ethernet interfaces as well as a full set of IP protocols, including EVPN and segment routing, to ensure service transport meets SLAs on a per service basis
- **Mission and Business critical networks:** with high availability and support for deterministic packet transport with a rich mix of dynamic and deterministic packet transport
- **High-Capacity Switch for CIN networks**, providing fanout, interfaces, full set of IP protocols required by a high-capacity CIN switch in a regional hub or as a Spine in a leaf-spine architecture in a primary hub
- **Border Router for Datacenter Interconnect (DCI)**, providing the capacity and coherent routing required for DCI.



Key Product Specifications NPT 2714 Family

Platform

Description	Specification
	NPT 2714 A, NPT 2714 AR
Chipset	J2C+
CPU	Intel Xeon 8 cores 1.9Ghz
Memory	64G
Storage	128G
Traffic Interfaces	• 36x400G • 144x100G • 288x25G • 288z10G
Control and management interfaces	• LCT/CLI 10/100/1000Base-T • RS232 console • USB 3.0 • OOB – SFP+, Aux (1000 base T)
Performance	• 14.4T non blocking switching capacity • 5400 MPPS processing rate
Power Supplies	• 1+1/2+2 hot swapable DC • 2+1, 3+1 hot swapable AC
Cooling	2 Fan drawers, 10 FAN's with N+1 redundancy
Timing interfaces	• 10MHz input/output SMB • 1PPS input/output SMB • BITS input/output E1/T1, 2048/1544Khz RJ48 • ToD+1PPS Input/output (V11.RJ45)
Physical specification	• 6U • Depth 600mm • Dimension(H x W x D): : 10.4" x 17.4" x 23.6" / 265.9mm [6U] x 443mm x 600mm • Weight: chassis, 21.5kg

Multiservice Capabilities NPT 2714 Family

Description	Specification	
	NPT 2714 A	NPT 2714 AR
L2/L3 VPN Services	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	L2VPN - MEF 3.0 (IP-MPLS) • 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
Coherent Routing	• 400G, 200G, 100G, coherent interfaces • ZR and OPENZR+ application • CFP2 DCO for 100G/200G • QSFP_DD for 100/200	• Not Applicable
Optical Interfaces	• CWDM, • DWDM, • ZR,OpenZR+ • Amplifiers	• Not Applicable

Software features provided by IP Wave rNOS

Description	Specification	
	NPT 2714 A	NPT 2714 AR
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 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)	• 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	• Label switching (LER, LSR) • Label Distribution Protocol (LDP) • BGP Labeled Unicast (BGP-LU) • 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)	• 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
		• SR-MPLS
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		  • Binding SID
		• SR, SR-TE OAM
		• Flexible Algorithm
		• BGP Color Extended Community

Software features provided by IP Wave rNOS (continued)

Description	Specification	
	NPT 2714 A	NPT 2714 AR
Multicast	• IPv4 and IPv6 Multicast Routing • PIM-SM, PIM-SSM, PIM-ASM • IGMPv3, MLDv2 • MSDP • Anycast RP • BGP IPv4 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	• 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
Timing and Synchronization	• Stratum 3E OCXO • ITU-T G.8262.1 Sync-E • IEEE 1588v2 - T-GM, T-BC, APTS • G.8275.1, G.8275.2 • G.8273.2 Class C	• Stratum 3E OCXO • ITU-T G.8262.1 Sync-E • IEEE 1588v2 - T-GM, T-BC, APTS • G.8275.1, G.8275.2 • G.8273.2 Class C

OAM	• Ethernet OAM
	  • IEEE802.3ah
	  • IEEE 802.1ag
	  • ITU-T Y.1731 PM
	• IP OAM
	  • BFD
	  • Ping
	  • Trace-route
	  • TWAMP
	• MPLS-TP OAM - G8113.2, RFC5860, BFD
	• MPLS OAM – Ping/Traceroute MPLS
	• Y.1564
	• LLDP
	• DHCP Relay
	• Streaming Telemetry
	• sFlow
	• Link Delay-Measurement
		• Ethernet OAM
		  • IEEE802.3ah
		  • IEEE 802.1ag
		  • ITU-T Y.1731 PM
		• IP OAM
		  • BFD
		  • Ping
		  • Trace-route
		  • TWAMP
		• MPLS OAM – Ping/Traceroute MPLS
		• LLDP
		• DHCP Relay
		• Streaming Telemetry
		• sFlow
		• Link Delay-Measurement

Software features provided by IP Wave rNOS (continued)

Description	Specification
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 • MACsec (future release)
Manageability	• CLI • LCT • SNMP MIB • NETCONF/gRPC - XML, JSON, GPB • YANG models - OpenConfig, IETF • Muse software suite (SDN orchestration and control) • EMS

Standards compliance

Description	Specification
Regulatory Compliance	Products comply with CE markings according to directives 2014/30/EC and 2014/35/EC
NEBS	Designed to meet GR-63, GR-1089 and GR-3160
Safety	• IEC 62368-1 (2nd edition) • UL 62368-1 • IEC 60825-1 for lasers • IEC 60825-2 for lasers
EMC 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 / Environmental	• ETSI EN 300 019
	  • Storage: Class 1.1
	  • Transportation: Class 2.3
	  • In-Use/Operational: Class 3.1E
	• QM 333
	• ETSI EN 300 753

RoHS	Compliance per EU RoHS, RoHS 2 directive 2011/65/EU and amendment 2015/863/EU directives.

Specifications subject to change without notice

Contact Us Contact us to learn more about Ribbon 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.