

FEATURES

- High capacity with redundancy
- Multiple modes of operation including TOR¹ switch, PE Router, and vBNG
- CUPS² (TR-459) for multiple switch UP supported by a single centralized CNF CP
- vBNG Evo™ with line rate 3-tier QoS of 6000 to 20,000 subscribers (depending on switch chosen)
- Routing Protocols: BGP/OSPF/ISIS/IGRP/SR

¹ Top-Of-Rack Switch

² Control Plane/User Plane Separation

The CommScope® MSR Series (MSR-800 and MSR-2400) multi-service routers introduce high-capacity, disaggregated routing and switching to access and aggregation networks. MSR multi-service routers can be deployed as an L2/L3 aggregation switch, Carrier Ethernet Services Edge Router, Broadband Network Gateway (BNG), and/or a Top-of-Rack switch. This flexibility complements CommScope's Cable and Telco access and core products in a wide variety of end-to-end network solutions.

MSR multi-service routers provide high-performance, low latency packet forwarding across 10G, 25G, 100G, and 400G interfaces. The switch is mountable in a standard 19-inch rack. The hardware provides high-availability features, including redundant, hot-swappable AC or -48 VDC PSUs, fans with 5+1 redundant fan modules, and port-to-power or power-to-port airflow options.

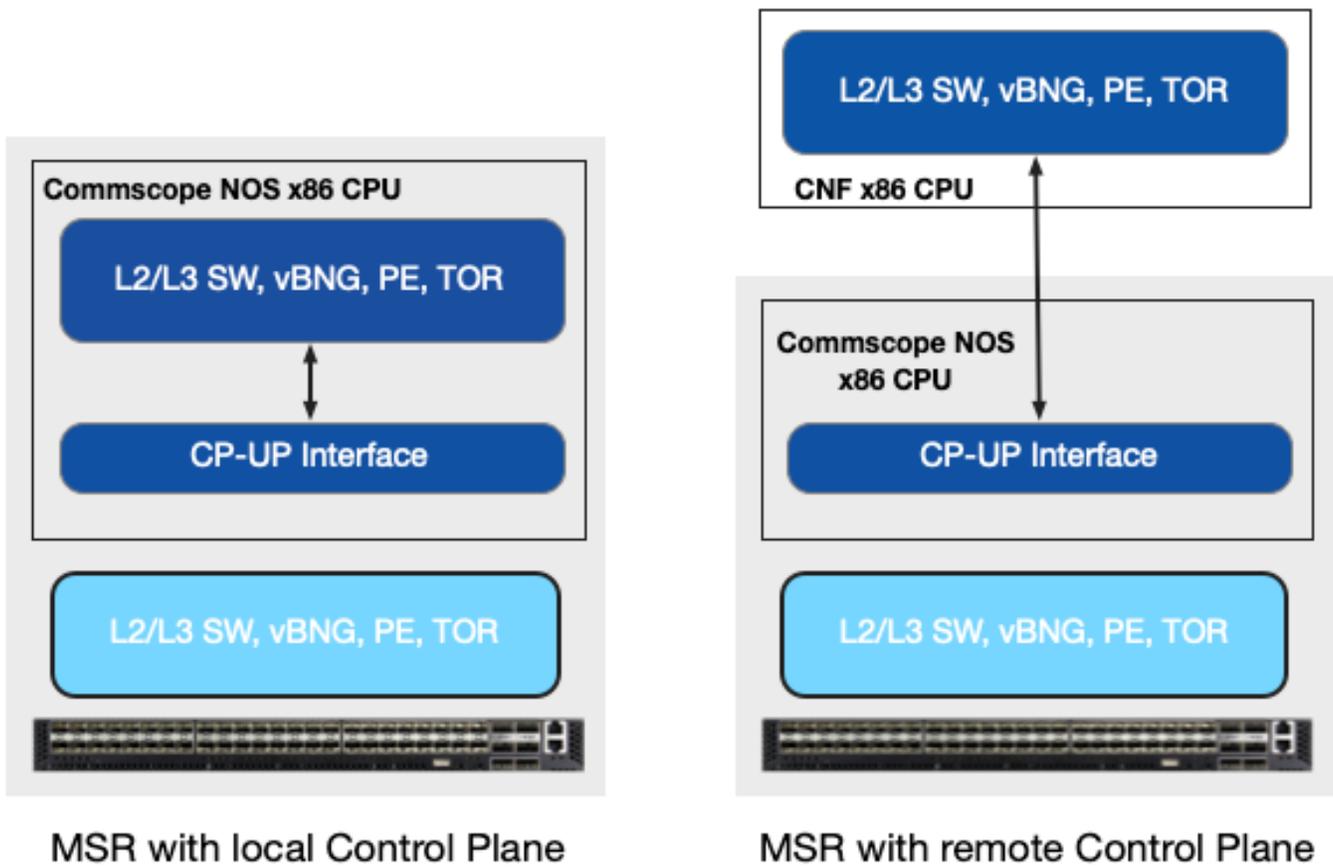


MSR-800



MSR-2400

The MSR multi-service routers are based on an Open Compute Project (OCP) Accepted model and use Network Operating System (NOS) software that runs on the switch. NOS software is designed for easy portability across different hardware configurations of the switch, based on a suite of switches powered by next-generation silicon from a noted vendor.



MSR multi-service routers leverage the disaggregated vBNG architecture—which separates the control plane (CP) and user/data plane (UP)—to enable a single CP to control large numbers of UP. All communication between the CP and the MSR is done via TR-459, a standard mechanism for interoperability between CPs and UPs from different vendors. An MSR can also host the CP directly on the switch to enable an MSR to be deployed as a standalone vBNG.

The control plane performs provisioning and management, subscriber sessions management, routing, policy, and security functions. The separated control plane supports a distributed deployment model; switches are deployed at access locations but are still controlled as one logical router from the centralized control plane.

MSR ports can be used for either access or uplink purposes. MSR multi-service routers support downstream traffic shaping and upstream policing, which can be configured per access port and/or subscriber session; additionally, traffic control through ACLs and Policy Base Routing can be deployed in either the downstream or the upstream. MSRs also provide detailed subscriber accounting and QoS statistics. High-performance packet forwarding is performed on the merchant silicon for low latency.

Software Features

MSR multi-service routers support multiple applications, each of which addresses a specific use; applications are controlled by software licenses. Customers can purchase all licenses for the same MSR if they plan to use a combination of feature packs.

TOP OF RACK FEATURE PACK

Feature	Description
Port VLAN Groups	Ports can be accessed with single VLANs, a combination of single and double tagged VLANs, or no VLANs. A VLAN can span multiple ports.
Bridge Groups	Logical bridge groups with member Ports and VLANs. Each bridge group could be provided with a routable IP address.
VXLAN	VXLAN-based L2 tunnels over IP. These tunnels are statically configured per MSR. Each VXLAN instance maps to a cluster of VLAN groups on the MSR.
Snoop IGMP/MLD/PIM	Snoop multicast control packets (IGMP/MLD/PIM) to build replication maps internally. This is used for multicast packet forwarding.
Port Mirroring	Mirror all packets in and out of a port to another port. This is used for debugging purposes.
LLDP	Dynamic detection of switch using Link Level Discovery Protocol.
LAG	Ethernet link groups bundled as a single LAG group running LACP.

BNG FEATURE PACK

Feature	Description
IPoE and PPPoE	Dynamic subscriber management for IPoE (DHCP) and PPPoE subscribers.
Subscriber Scale	The MSR-800 supports 6000 subscribers with QoS shaping per subscriber. The MSR-2400 supports 20,000 subscribers with QoS shaping per subscriber.
RADIUS based AAA, CoA	Subscriber authentication using RADIUS for AAA and Change of Authentication (CoA).
IPv4, IPv6, and Dual Stack	IPv4 only, IPv6 only, or dual stack subscribers.
DHCP v4/v6 Local Server	Local Pools to provide addresses to subscribers using DHCPv4 or v6.
DHCP v4/v6 Relay	Relay server with inserting of right Options for address allocation by backend server.
Downstream HQoS	3 Level hierarchical QoS shaping of subscriber traffic in downstream.
Upstream Hierarchical Policing	Upstream traffic policing in hierarchical manner.
Lawful Intercept	Lawful intercept of subscriber traffic triggered by RADIUS, SNMPv3, or CLI.
L3 VPN	MPLS BGP-based L3 VPNs for subscribers.
MPLS IP Routing	MPLS LER with LDP, OSPF, BGP, and ISIS.
Management	CLI, SNMP, and Netconf-YANG.
Redundancy	1+1 for Control Plane and N+1 for switch data plane.

MPLS PROVIDER EDGE (PE) AND AGGREGATION FEATURE PACK

Feature	Description
L2VPN ELINE, ELAN	L2VPN point to point (E-LINE) and point to multi-point (E-LAN) over MPLS.
RSVP-TE, LDP, BGP, OSPF, ISIS	MPLS LER functionality.
MPLS Fast Re-Route	Fast Re-Route based on RSVP-TE signaling
Ingress Service Policing	Policing and shaping of traffic at ingress into aggregation switch in both access and core direction.
Ethernet OAM	Y.1731 Ethernet OAM.
G.8032 Ring Protection	Ethernet Ring protection using G.8032 protocol.
Redundancy	1+1 switch redundancy.
MPLS Segment Routing	Configured as an edge router, the MSR initiates and terminates MPLS segment routed paths.

MSR-800 HARDWARE FEATURES

Feature	Description
Ports	
Switch Ports	48 x SFP+ each supporting 10 GbE or 1 GbE 6 x 100G QSFP28 each supporting 1 x 40/100 GbE
Management Ports on Front Panel	1 x RJ-45 serial console 1 x RJ-45 100/1000BASE-T management port 1 x USB Type A storage port
Key Components	
Switch Silicon	Broadcom Qumran MX BCM88370
CPU Modules	Intel Rangeley C2538 4C 2.4 GHz Processor DDR3 SO-DIMM 8 GB x 2 mSATA: 32 GB
Performance	
Switching Capability	800 Gbps non-blocking
Forwarding Rate	720 Mpps
Jumbo Frame	9 Kbytes
On-chip Buffering	16 MB
Deep DRAM Buffering	6 GB
Port-to-Port Latency	Under 5 microseconds
Supported Optics and Cables	
SFP+ Ports	10GBASE-CR DAC: up to 3 m passive; up to 10 m active 10GBASE-SRL/SR: up to 100/300 m over OM3 MMF 10GBASE-LR: Up to 10 km over SMF 10GBASE-ER: Up to 40 km over SMF 1000BASE-SX, 1000BASE-LX, 100/1000BASE-T
QSFP+ Ports	40GBASE-CR4 DAC: up to 3 m passive; up to 10 m active 40GBASE-CR4 DAC to 4 x SFP+ 10GBASE-CR DAC: up to 3 m passive; up to 10 m active 40GBASE-SR4: Up to 100 m over OM3 MMF, 150 m over OM4 MMF 40GBASE-LR4: Up to 10 km over SMF 100GBASE-SR4: 100 Gbps short reach transceiver 100GBASE-LR4: 100 Gbps long reach transceiver QSFP28 AOC Cable: 100 Gbps to 100 Gbps AOC cable with up to 30 M 100G QSFP28 DAC Cable: 100GBASE-CR4 100 Gbps to 100 Gbps Twinax DAC Cable
Physical and Environmental	
Dimensions (W x D x H)	44 x 54.8 x 4.4 cm (17.32 x 21.57 x 1.73 in)
Weight	9.34 kg (20.59 lb), with two installed PSU modules
Fans	Hot-swappable, 5+1 redundant fans
Operating Temperature	0° to 40°C (32° to 104°F)
Storage Temperature	-40° to 70°C (-40° to 158°F)
Operating Humidity	5% to 95% non-condensing

MSR-2400 HARDWARE FEATURES

Feature	Description
Ports	
Switch Ports	64 x SFP+ each supporting 10/25 GbE 2 x 100G QSFP-DD each supporting 100 Gbe 8 x 100G QSFP28 each supporting 100 Gbe
Management Ports on Front Panel	1 x RJ-45 serial console 1 x RJ-45 100/1000BASE-T management port 1 x USB Type A storage port
Key Components	
Switch Silicon	Broadcom Qumran-2C BCM88820 External TCAM: Broadcom BCM16K
CPU Modules	Intel Xeon D-1548 8-core DDR4 SO_DIMM 32 GB (16 GBx2) SSD: M.2 128 GB
Performance	
Switching Capability	2.4 Tbps non-blocking
Forwarding Rate	1000 Mpps
Jumbo Frame	9 Kbytes
On-chip Buffering	32 MB
Deep DRAM Buffering	4 GB
Port-to-Port Latency	Under 5 microseconds
Supported Optics and Cables	
SFP+ Ports	10GBASE-CR DAC: up to 3 m passive; up to 10 m active 10GBASE-SRL/SR: up to 100/300 m over OM3 MMF 10GBASE-LR: Up to 10 km over SMF 10GBASE-ER: Up to 40 km over SMF 1000BASE-SX, 1000BASE-LX, 100/1000BASE-T
QSFP+ Ports	40GBASE-CR4 DAC: up to 3 m passive; up to 10 m active 40GBASE-CR4 DAC to 4 x SFP+ 10GBASE-CR DAC: up to 3 m passive; up to 10 m active 40GBASE-SR4: Up to 100 m over OM3 MMF, 150 m over OM4 MMF 40GBASE-LR4: Up to 10 km over SMF 100GBASE-SR4: 100 Gbps short reach transceiver 100GBASE-LR4: 100 Gbps long reach transceiver QSFP28 AOC Cable: 100 Gbps to 100 Gbps AOC cable with up to 30 M 100G QSFP28 DAC Cable: 100GBASE-CR4 100 Gbps to 100 Gbps Twinax DAC Cable
Physical and Environmental	
Dimensions (W x D x H)	44 x 48 x 8.7 cm (17.32 x 18.90 x 3.43 in)
Weight	16 kg (35.27 lb), with two installed PSU modules
Fans	Hot-swappable, 4+1 redundant fans
Operating Temperature	0° to 45°C (32° to 113°F)
Storage Temperature	-40° to 70°C (-40° to 158°F)
Operating Humidity	5% to 95% non-condensing

Software Version and Licensing

CommScope's NOS is sold as a set of three feature packs: TOR, BNG, and PE. Based on the feature pack license(s) that are purchased, the appropriate image is loaded onto the device. By combining additional feature packs, the MSR can be used as a multi-function device, such as a BNG and MPLS Aggregation router or a TOR and BNG services router.

Yearly maintenance and support charges apply to the entire product package (MSR software and any additional licenses) as a predefined percentage of the original purchase price.

POWER OPTIONS

Feature	Description
PSUs	
	2 redundant, load-sharing, hot-swappable AC or -48 VDC
AC Input Range	
	90 V ~ 240 VAC
DC Input Range	
	-36 ~ -72 VDC

REGULATORY

Feature	Description
EMI	
	CE Mark EN55032 Class A EN55024 EN61000-3-2 EN61000-3-3 FCC Part 15 Subpart B Class A VCCI Class A BSMI
Safety	
	CB UL/CUL
Environmental	
	NEBS Level 1 RoHS 2.0 Compliant WEEE Standards: The switches complied with the following WEEE standards: Waste Electrical and Electronic Equipment (WEEE Directive 2002/96/EC)

ORDERING INFORMATION

Model Name	Description
MSR-800-BNG	BNG/TOR/CIN switch 6x100G and 48x10G AC
MSR-2400-BNG	BNG/TOR/CIN switch 10x100G and 64x10/25G AC
SFP-CP	GbE SFP 1000Base-T Transceiver RJ45 Connector
SFP-PLUS-BIDI-CTEMP-G	SFP+ BDM, 1 LC Con10Gbe (10GBASE-ER)
QSFP-100G-SR4	100GBase-SR4 850nm QSFP28/MPO 100M

RELATED PRODUCTS

vBNG Evo™	XP4202M XGS-PON Remote Optical Line Terminal (R-OLT)
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Contact Customer Care for product information and sales:

- United States: 888-944-4357
- International: +1-215-323-2345

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MSR-800-DS_RevA