JUNIPER
NETWORKS

MX SERIES 3D UNIVERSAL EDGE ROUTERS FOR THE MIDRANGE

Product Overview

Network operators that need compact edge routers to satisfy their unique business and technical challenges are often forced to either compromise on performance, features and functions, or purchase larger systems than they need to get the features they want. Neither option is ideal, and the result is either missed revenue opportunities or highly inefficient CapEx and OpEx spend.

Juniper Networks SDN-ready MX Series 3D Universal Edge Routers for the Midrange offer a capital and space efficient suite of compact routers with all the performance, features and functions they need to build the best high-IQ network.

Product Description

Juniper Networks SDN-ready MX Series 3D Universal Edge Routers for the Midrange offer a capitally efficient, agile routing platform that promotes operational excellence for all types of WAN edge, WAN core, Internet edge, branch aggregation, campus, data-center and business, mobile and residential edge applications, including high-end CPE. MX Series 3D Universal Edge Routers for the Midrange provide customers with a suite of compact routers with all the performance, features and functions they need to build the best network infrastructure.

Comprised of the MX5, MX10, MX40, and MX80, the MX Series for the Midrange leverages the same Juniper Networks Junos operating system and programmable Junos Trio chipset that is used by larger MX Series chassis. Furthermore, these midrange routers can be upgraded using software licenses to scale system capacity through 80Gbps and can add services in a cost effective "pay-as-you-grow" model to meet evolving market requirements and provide investment protection.

Architecture and Key Components

Powered by Juniper Networks Junos® operating system and the programmable Junos Trio chipset, all MX Series platforms provide a consistent operating environment that streamlines network operations and improves the availability and performance of all types of services supported at the universal edge. Juniper Networks® MX5, MX10, MX40 and MX80 3D Universal Edge Routers for the midrange are two rack units (2 RU) high and support optional redundant power supplies and fans, making them perfectly suited for smaller scale environments requiring full Ethernet capabilities and the advanced services.

Midrange Router*	First MIC Slot**	Second MIC Slot	Service MIC Slot	10 GbE Port	Software License Upgrade
MX5	✔		✔		✔
MX10	✔	✔	✔		✔
MX40	✔	✔	✔	✔	✔
MX80	✔	✔	✔	✔	N/A

*All MX Series services and features are supported across the midrange router portfolio.

**Modular Interface Concentrator (MIC) slots are fully flexible and support all Ethernet and non-Ethernet MICs available across the MX Series.

Junos OS

Junos OS is a world-class network operating system with proven stability coupled with routing protocols, flexible policy language, and leading MPLS/VPN implementation. Junos OS runs on all MX Series platforms, as well as Juniper Networks ACX Access Gateways, M Series Multiservice Edge Routers, T Series Core Routers, J Series Services Routers, QFX Series Switches, EX Series Ethernet Switches, PTX Series Packet Transport Switches, and SRX Series Services Gateways, providing a single consistent OS from access to core, including routing, switching, services and security.

Junos OS offers XML interfaces for advanced scripting capabilities, and has been designed to configure the routing protocols that run on the MX Series and the properties of its interfaces. After a software configuration is activated, Junos OS has been designed to monitor the protocol traffic passing through MX Series devices, as well as to troubleshoot protocol and network connectivity problems.

Features and Benefits

At just 3.5-inches high (2 RU), MX Series routers for the Midrange are the most compact members of the MX Series portfolio and are designed to help customers drive down the total cost of ownership and increase operational efficiencies in both enterprise and service provider deployments without service compromise. The flexibility (mix and match interface types) and upgradability

(from MX5 up to MX80) make midrange MX Series routers ideal for campus, data center interconnect, and service provider WAN connectivity deployments.

The wide range of applications enabled by the MX Series family of routers and supported in the midrange systems include:

- Layer 2 stretch required for data center consolidation and data center mobility ((virtual private LAN service (VPLS), pseudowires, MPLS fast reroute, Bidirectional Forwarding Detection (BFD) protocol))
- L2 and L3 end-to-end network segmentation (using L2/L3VPNs)
- Service provider router with separate control and forwarding functions to provide maximum scale and intelligent service delivery capabilities along with hierarchical quality of service (QoS)
- Campus router requiring subnet mobility, L2/L3 segmentation, and QoS
- Video distribution for IPTV services—with advanced capabilities such as multicast MPLS VPNs
- Cloud computing—provides the perfect platform for connectivity to and between clouds
- WAN Edge—provides PDH, TDM and Ethernet interfaces for flexible connectivity

Table 2: Features and Benefits

Feature	Benefits
Scalability	• Investment protecting capacity upgrades, from20 Gbps (MX5) to 40 Gbps (MX10) to 60 Gbps (MX40) to 80 Gbps (MX80), all through software licensing • Increases flexibility with support for 10/100 Mbps through 10G Ethernet, and PDH/TDM support, starting at channelized T1 through OC192.
Cloud-ready virtualization	Increased flexibility and deployment options includingdevice virtualization—virtual router, logical systems, virtual switch, and virtual chassis--and link virtualization—VLAN, link aggregation group (LAG), generic routing encapsulation (GRE), and MPLS label-switched path (LSP)
Advanced IP routing	Comprehensive support for RFC 2547.bis IP/MPLS VPN (L3 VPN)—full support for MPLS VPNs throughout the Ethernet network, as well as Multicast VPNs.
Virtualized network services	• Operationally streamlined and cost effective service agility with inline support for flow monitoring (and Network Address Translation (NAT) to map private addresses to public addresses; as well as 9Gbps of dedicated services throughput for Carrier-Grade NAT; IPsec, Stateful Firewall and Flow monitoring using the MS-MIC
Tunneling protocols	• GRE unicast tunneling—supports GRE fragmentation • IP-IP unicast tunneling, multicast tunneling • Protocol Independent Multicast (PIM) sparse mode unicast tunneling • Virtual loopback tunneling (VT)

MX5

MX10

MX40

MX80

MX80-48T
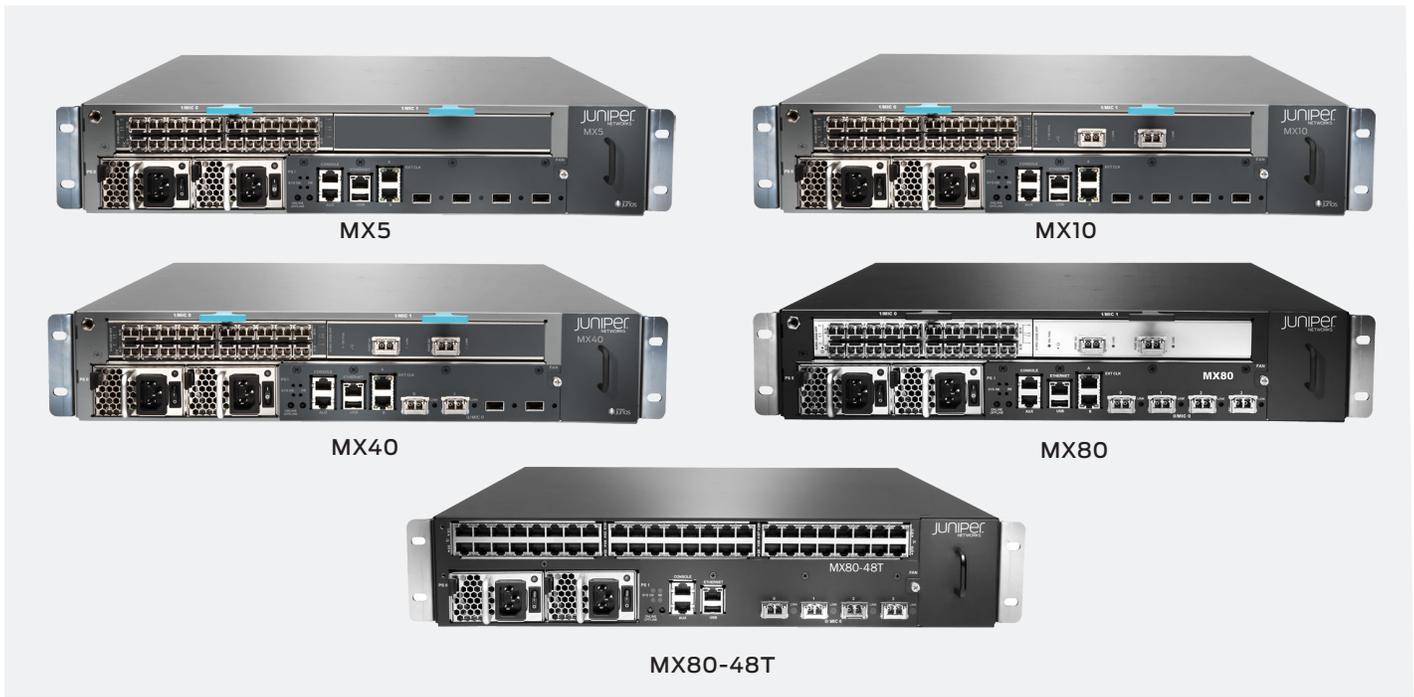
Specifications

System capacity
- MX5 - 20 Gbps
- MX10 - 40 Gbps
- MX40 - 60 Gbps
- MX80 - 80 Gbps

Throughput per slot
- Not applicable

Packet forwarding capacity
- 55 to 60 Mpps across all midrange routers

Modular Interface Concentrators (MICs) per chassis
- MX5 supports one MIC and one MS-MICMX10, MX40 and MX80 can accommodate two MICs and one MS-MIC

Chassis per rack
- 24

Physical dimensions (W x H x D)
- 17.5 x 3.5 x 23.48 in (44.5 x 8.76 x 59.6 cm)

Weight (lb/kg) fully configured
- 30 lb/13.7 kg
- Mounting—front or center

Power (AC/DC)
- 100 to 240 VAC
- -40 to -72 VDC
- AC power consumption (theoretical aggregate)—376 W
- DC power consumption (theoretical aggregate)—320 W

Operating temperature
- 32º to 104º F (0º to 40º C)

Humidity
- 5% to 90% noncondensing humidity

Altitude
- No performance degradation to 13,000 ft (4,000 m)

Agency Approvals

Safety
- CAN/CSA-22.2 No. 60950-00/UL 1950 Third Edition,
- Safety of Information Technology Equipment
- EN 60825-1 Safety of Laser Products - Part 1: Equipment Classification, Requirements, and User's Guide
- EN 60950 Safety of Information Technology Equipment

EMC
- AS/NZS 3548 Class A (Australia/New Zealand)
- EN 55022 Class A Emissions (Europe)
- FCC Part 15 Class A (USA)
- VCCI Class A (Japan)

NEBS
- GR-63-Core:NEBS, Physical Protection
- GR-1089-Core:EMC and Electrical Safety for Network Telecommunications Equipment

ETSI
- ETS-300386-2 Telecommunication Network Equipment Electromagnetic Compatibility Requirements

Immunity
- EN 61000-3-2 Power Line Harmonics
- EN 61000-3-3 Voltage Fluctuations and Flicker
- EN 61000-4-2 ESD
- EN 61000-4-3 Radiated Immunity
- EN 61000-4-4 EFT
- EN 61000-4-5 Surge
- EN 61000-4-6 Low Frequency Common Immunity
- EN 1000-4-11 Voltage Dips and Sags

Element Management
- Junos Space Platform and applications
- J-Web Software graphical user interface

Specifications (Continued)

Policy Management
- Junos Scope
- SRC Series Session and Resource Control Modules

Third-Party Management Applications
- HP, IBM, InfoVista, Intelliden, WANDL

SNMP
- SNMP v2/v3 bilingual agent support

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit **www.juniper.net/us/en/ products-services**.

Ordering Information

Model Number	Description
Base unit	
MX5-T-AC*	AC chassis
MX5-T-DC	DC chassis
MX10-T-AC	AC chassis
MX10-T-DC	DC chassis
MX40-T-AC	AC chassis
MX40-T-DC	DC chassis
MX80-T-AC	AC chassis
MX80-T-DC	DC chassis
MX80-AC	AC chassis
MX80-DC	DC chassis
MX80-48T-AC	AC chassis
MX80-48T-DC	DC chassis
MICs	
MIC-3D-8OC3OC12-4OC48	High-density multi-rate MIC, 8 port non-channelized OC3-OC12 / 4 port non-channelized OC48 MIC
MIC-3D-4OC3OC12-1OC48	Low-density multi-rate MIC, 4 port non-channelized OC3-OC12 / 1 port non-channelized OC48 MIC
MIC-3D-4CHOC3-2CHOC12	Low density multi-rate MIC, channelized, 4 port channelized OC3 / 2 port channelized OC12 (down to DS0) MIC

Model Number	Description
MIC-3D-4OC3OC12-1OC48	Low density multi-rate MIC, 4 port non-channelized OC3-OC12 / 1 port non-channelized OC48 MIC
MIC-3D-8CHOC3-4CHOC12	High density multi-rate MIC, channelized, 8 port channelized OC3 / 4 port channelized OC12 (down to DS0) MIC
MIC-3D-16CHE1-T1-CE	Channelized E1/T1 Circuit Emulation MIC
MIC-3D-8DS3-E3	8 port non-channelized DS3 / non-channelized E3 MIC
MIC-3D-8CHDS3-E3-B	8 port channelized DS3 (down to DS0) / non-channelized E3 MIC
MIC-3D-8OC3-2OC12-ATM	Multi-rate ATM MIC, 8 port non-channelized OC3/STM1 or 2 port non-channelized OC12/STM4
MS-MIC	Multiservices MIC supports a variety of licensed applications including Stateful firewall, Carrier-Grade NAT (CGN), and deep packet inspection (DPI); each purchased separately
Midrange router upgrade licenses	
MX-5-10-UPG-B	Software upgrade for MX5 to MX10
MX-5-40-UPG-B	Software upgrade for MX5 to MX40
MX-5-80-UPG-B	Software upgrade for MX5 to MX80
MX-10-40-UPG-B	Software upgrade for MX10 to MX40
MX-10-80-UPG-B	Software upgrade for MX10 to MX80
MX-40-80-UPG-B	Software upgrade for MX40 to MX80
Junos OS	
Junos-WW	Worldwide
Junos OS	USA
Software Licenses	
S-MX80-ADV-R	License to support full scale L3 route and L3 VPN on MX80
S-MX80-Q	License to support per VLAN queuing on MX80
S-MX80-SA-FP	Subscriber Management Feature Pack License
S-MX80-SSM-FP	Subscriber Service Management Feature Packet License (RADIUS/SRC Series-based service activation and deactivation) per service accounting features for subscribers, MX80

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at **www.juniper.net**.

To purchase Juniper Networks solutions, please contact your Juniper Networks representative at +1-866-298-6428 or authorized reseller.