MX SERIES 3D UNIVERSAL EDGE ROUTERS FOR THE MIDRANGE

Product Overview

Juniper Networks MX Series 3D Universal Edge Routers for the midrange offer a scalable and flexible upgrade path for enterprise and service provider customers. Comprised of the MX5, MX10, MX40, and MX80 3D Universal Edge Router, the MX Series for the midrange has been designed to provide the 3D scaling necessary to address today's advanced feature requirements even in the smallest of environments. Powered by Juniper Networks Junos operating system and high-performance Junos Trio chipset, these midrange routers can be upgraded using software licenses to scale to meet changing business requirements. This scalability further enables informed network purchasing decisions.

Juniper Networks® MX5, MX10, MX40 and MX80 3D Universal Edge Routers for the midrange deliver high performance and easy upgradability with a scalable architecture. Each of the MX Series midrange routers can be upgraded using a software license in a "pay-as-you-grow" model, and are the most compact members of the MX Series product family. Two rack units (2 RU) high and built to support optional redundant power supplies and fans, these platforms are perfectly suited for smaller scale environments requiring full Ethernet capabilities and the advanced services and features of the MX Series routers.

Table 1: MX Series Midrange Key Hardware Differences

MIDRANGE ROUTER*	FIRST MIC SLOT**	SECOND MIC SLOT	10GbE PORT	SOFTWARE LICENSE UPGRADE
MX5	✓			✓
MX10	✓	✓		✓
MX40	✓	✓	✓ (2)	✓
MX80	✓	✓	✓ (4)	N/A

*All MX Series services and features are supported across the midrange routers.
**Modular Interface Controller (MIC) slots are fully flexible and support all Ethernet and non-Ethernet MICs available across the MX series.

Architecture and Key Components

The MX Series is a family of high-performance routers functioning as a universal edge platform capable of supporting all types of WAN edge, WAN core, Internet edge, branch aggregation, campus core, and business/mobile/residential edge services.

Powered by Juniper Networks Junos® operating system, 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.
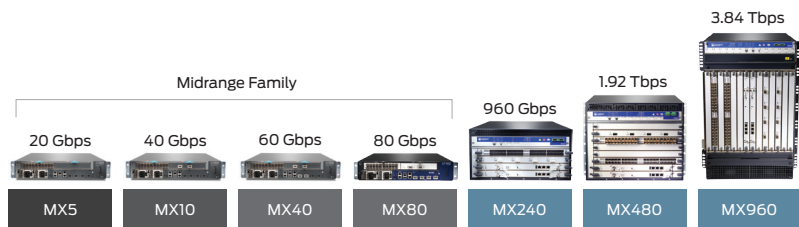

Figure 1: MX Series 3D Universal Edge Routers

Features and Benefits

Midrange MX Series routers are compact members of the MX Series product family powered by the Trio chipset and Junos OS, Juniper's high-performance operating system for advanced routing and switching. Only 2RU or 3.5-inches high, the midrange MX Series routers 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 (scalable upgrades from MX5 up to MX80, as required) make the 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 core 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

The Midrange MX Series Extends Junos OS in the Network

Junos OS is a world-class 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 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. Junos OS—the first operating system developed specifically for Internet routing—is especially designed for large production networks. With native support for both IPv4 and IPv6, as well as advanced interworking capabilities, Junos OS also eases the transition to IPv6 and ensures long-term investment protection.

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.

Table 2: Features and Benefits

FEATURE	BENEFITS
Scalability	· Capacity—20 Gbps (MX5) to 40 Gbps (MX10) to 60 Gbps (MX40) to 80 Gbps (MX80) through software licensing · Ethernet—10/100 Mbps to GbE to 10GbE · Time-division multiplexing (TDM) interfaces DS3 to OC48
Junos OS	· Industry-leading performance in a compact form factor · Software development kit (Junos SDK) that allows third parties to develop applications on Junos OS
Cloud-ready virtualization	· Device virtualization—virtual router, logical systems, and virtual switch · Link virtualization—VLAN, link aggregation group (LAG), generic routing encapsulation (GRE), and MPLS label-switched path (LSP)
Advanced IP routing	· RFC 2547.bis IP/MPLS VPN (L3 VPN)—full support for MPLS VPNs throughout the Ethernet network · Multicast VPN
Inline services	· Flow monitoring—support flow monitoring and sampling services inline in the data path · Static Network Address Translation (NAT)—map private addresses to public addresses
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
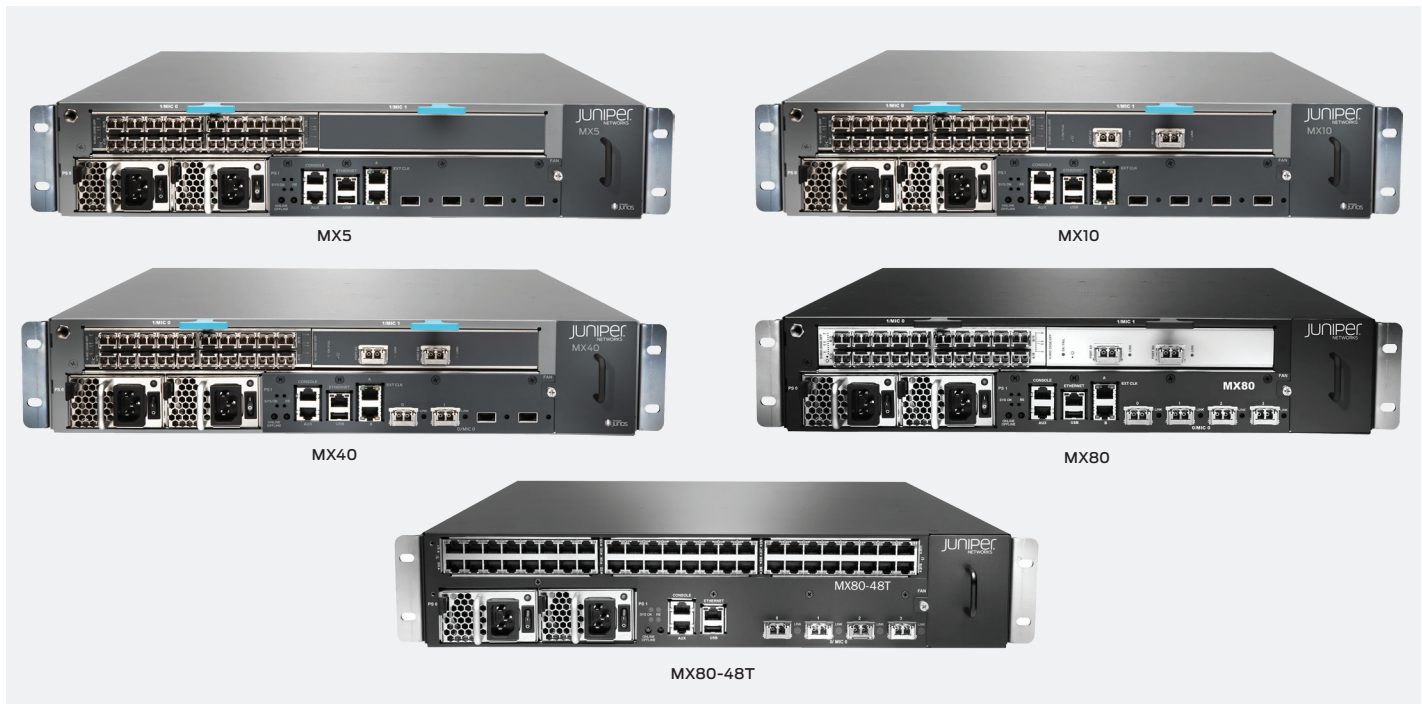
Specifications

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

Dense Port Concentrators (DPCs) and/or Modular Port Concentrators (MPCs) per chassis
- MX5 supports 1 MIC (no DPC/MPC slots)
- MX10, MX40 and MX80 can accommodate 2 MICs (no DPC/MPC slots)

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

Specifications (continued)

Element Management
- Juniper Networks J-Web Software graphical user interface

Policy Management
- Juniper Networks Junos Scope
- Juniper Networks 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 Service 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

* "T" denotes timing support

MODEL NUMBER	DESCRIPTION
MIC	
MIC-3D-20GE-SFP	20 ports of 10/100/1000 Ethernet with small form-factor pluggable transceiver (SFP) interfaces
MIC-3D-2XGE-XFP	2 10GbE modular interface ports with 10-gigabit small form-factor pluggable transceiver (XFP) interfaces
MIC-3D-40GE-TX	40 ports of 10/100/1000 Ethernet with Tx interfaces
MIC-3D-4OC3OC12-1OC48	Low density 4 port clear channel OC3, or 4 port OC12, or 1 port OC48
MIC-3D-8OC3OC12-4OC48	High density 8 port clear channel OC3, or 8 port OC12, or 4 port OC48
MIC-3D-8DS3-E3	8 port clear channel DS3/E3
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 on MX80
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.