

MX240, MX480 and MX960 3D Universal Edge Routers



Product Overview

Businesses and cloud builders of all types—from telecom service providers to enterprises—are under pressure to increase network scale, performance, and reliability while containing capital spending and streamlining operations. Achieving these goals is difficult due to double-digit growth rates, driven mainly by cloud adoption, online video, and mass adoption of mobile devices.

Powered by the Junos operating system and Junos Trio chipset, the SDN-ready MX Series Universal Edge Router portfolio helps enterprises, cloud operators, service providers, and cable operators increase network scale, performance, and reliability. The MX Series delivers the capital efficiency, service agility, and operational scale needed for next-generation carrier, cloud and enterprise applications.

Product Description

Juniper Networks® MX Series 3D Universal Edge Routers are a portfolio of high-performance, software-centric physical and virtual routers that support a broad set of applications in service provider, enterprise and cloud networks. With powerful routing, switching, and services capabilities, the MX Series delivers unmatched flexibility and investment protection.

Powered by Juniper Networks Junos® operating system, the MX Series streamlines network operations and improves the availability, performance, and security of all types of services. It offers the most complete, advanced features in the industry, including traffic segmentation and virtualization with MPLS, subscriber management, sophisticated virtualization techniques such as Virtual Chassis technology and virtual CPE, low-latency multicast, as well as comprehensive security and QoS implementations that ensure the quality delivery of time-sensitive applications and services.

With the MX Series, all major components are field replaceable, increasing system availability and decreasing mean time to repair (MTTR). Carrier-class reliability and high availability features on the MX Series include graceful restart, nonstop active routing (NSR), MPLS fast reroute, unified in-service software upgrade (unified ISSU), a comprehensive OAM toolkit, and service-level resiliency with features such as virtual private LAN service (VPLS) multihoming.

MX Series 3D Universal Edge Routers provide the 3D scale, bandwidth, services, and subscribers that cloud builders, enterprises and service providers need to command a competitive advantage in today's rapidly changing environment. The MX Series portfolio offers a broad range of physical and virtual platforms that deliver routing capacity from 1 Gbps through 80 Tbps. The MX Series portfolio includes the vMX virtual router; highly compact routers such as the MX5, MX10, MX40, and MX80; an aggregation optimized router, the MX104; modular edge routers including the MX240, MX480, and MX960; and ultra-high capacity edge and converged edge/core platforms such as the MX2010 and MX2020. This datasheet specifically addresses the Juniper Networks MX240, MX480, and MX960 3D Universal Edge Routers.

- The MX240 offers high-interface density and performance in a space-efficient package that is practical for enterprise WAN, data center, and campus deployments as well as several service provider applications in small and medium points of presence (POPs).
- The MX480 provides a dense, highly redundant platform primarily targeted for medium to large enterprise campuses and data centers, and service provider edge applications in medium and large PoPs.
- The MX960 is a high-density, high-capacity platform designed for the service provider edge and data center cores.

Architecture and Key Components

Table 1: MX Series Key Components

Description	MX240	MX480	MX960
System capacity ¹	1.92 Tbps	5.12 Tbps	9.92 Tbps
Switch fabric capacity per slot ²	480 Gbps	480 Gbps	480 Gbps
MPCs and DPCs per chassis	3	6	12
Chassis per rack	9	6	3

Switch Control Board (SCB)

The SCB powers on and powers off cards, controls clocking, resets, boots, monitors and controls system functions, including fan speed, board power status, inline power distribution module (PDM) status and control, and the system front panel. The switch fabric is integrated into the SCB, providing a non-blocking architecture that connects to all within the chassis, and the Routing Engine installs directly into the SCB. Three SCBs are available for the MX960, MX480, and MX240 routers—the SCB, the SCBE, and the SCBE2.

Table 2: SCB Comparison

Model Number	Description	Switch Fabric Capacity (Tbps)		
		MX240	MX480	MX960
SCBE2-MX-BB	Enhanced MX Switch Control Board (SCBE2)	1.92	5.12	9.92
SCBE-MX-BB	Enhanced Switch Control Board (SCBE)	.96	2.72	5.12
SCB-MX960-BB	Switch Control Board (SCB)	.48	1.44	2.64

Routing Engine (RE)

The Routing Engine handles all routing protocol processes, the software processes that control the router's interfaces, the chassis components, system management, and user access to the router. These routing and software processes run on top of a kernel that interacts with the Packet Forwarding Engine (PFE). The Routing Engine also provides control plane functions and runs Junos OS. Software processes that run on the Routing Engine maintain the routing tables, manage the routing protocols used on the router, control the router interfaces, control some chassis components, and provide the interface for system management and user access to the router. Routing Engines communicate with DPCs and MPCs via dedicated out-of-band management channels, providing a clear distinction between the control and forwarding planes.

Modular Port Concentrator (MPC)

MPCs leverage the Junos Trio chipset to deliver high density 1, 10, 40 and 100 Gigabit Ethernet, as well as ATM/SONET and inline services across the entire MX Series portfolio. These advanced capabilities allow you to flexibly mix and match interfaces to create service-specific and "pay-as-you-grow" configurations. The MPC houses the PFEs to deliver comprehensive Layer 3 routing (IPv4 and IPv6), MPLS, and Layer 2 switching and advanced Hierarchical quality-of-service (HQoS).

For more details on MPCs, please visit www.juniper.net/us/en/local/pdf/datasheets/1000294-en.pdf.

Dense Port Concentrator (DPC)

DPCs provide multiple physical interfaces and PFEs on a single board that installs in a slot in the MX Series routers. A DPC receives incoming packets from the network and sends outgoing packets to the network. The PFEs on a DPC are equipped with purpose-built ASICs that perform packet processing and forwarding. Each PFE consists of one I-Chip for Layer 3 processing and one Layer 2 network processor.

For more details on the DPC, please visit www.juniper.net/us/en/local/pdf/datasheets/1000209-en.pdf.

Junos OS

Junos OS is a single, modular OS with a single release cycle that is supported across all Juniper Networks routers, switches, and security devices in a unique approach that extends significant operational and economic benefits. Junos OS streamlines network operations and improves the availability, performance, and security of all types of services supported by the MX Series 3D Universal Edge Routers, including L2/L3 VPNs, traffic segmentation, low-latency multicast, and comprehensive QoS features that accelerate the delivery of time-sensitive applications.

Junos OS also offers advanced virtualized network services such as Virtual Chassis technology, cloud-based CPE, and network edge services such as network address translation (NAT) and carrier-grade NAT (CGNAT), IPsec, flow monitoring, and stateful firewall—allowing the seamless and operationally efficient integration of these advanced service capabilities directly on the MX Series. Unlike other network operating systems that are fragmented into many different release images joined under a common "brand," our unified approach to OS development and deployment reduces the cost, complexity, and time to implement and maintain network infrastructure.

MX Series Features and Benefits

Unmatched Network Availability

The MX Series 3D is a true carrier-grade platform that ensures nonstop network availability with layered physical, logical, and protocol-level resiliency options. Chassis redundancy is based on advanced Virtual Chassis technology. Link aggregation group (LAG) technology supports stateful card and port redundancy, as well as subscriber and session persistence in the case of switchover.

On the software side, Junos OS has a modular architecture that runs each program independently with its own memory space to ensure that processes do not interfere with one another. A full set of high availability (HA) features, including unified in-service software upgrade (ISSU); a comprehensive OAM toolkit, Junos XML management protocol commit script capabilities and service-level resiliency with features such as virtual private LAN service (VPLS) multihoming.

Advanced Virtualized Network Services

Junos OS-based virtualized network services enable cost-effective router integrated service scale without impacting forwarding performance or requiring operators to use third-party appliances. The MX Series can efficiently support services that include the following:

- Junos Video Focus for proactive video quality assurance
- Junos Address Aware, which helps you conserve your IPv4 address pool, ensure IPv4/IPv6 coexistence, and transition to IPv6
- Junos Network Secure, which provides stateful firewall services for network protection and managed security offers
- Junos VPN Site Secure, which uses standard encryption modes to secure communication between the customer premises and the network edge, and for added security over L3 VPNs
- Junos Traffic Vision, which monitors traffic flows and generates detailed flow records

Service Control Gateway Capabilities

The MX Series provides an excellent foundation for the Service Control Gateway, which considers network state, application type, subscriber privilege, and operator policy to dynamically direct traffic to service chains.

Comprehensive Broadband Edge Capabilities

The MX Series provides a powerful broadband network gateway (BNG) that lets operators provision broadband services for today and tomorrow with support for Point-to-Point Protocol (PPP) subscriber termination, Dynamic Host Configuration Protocol (DHCP), IPv4/IPv6 local server, and relay proxy for subscribers' migration to DHCP access models. Juniper's solution also supports RADIUS and Diameter back-end servers to facilitate authentication, policy control, and accounting, and it offers flexible L2/L3 wholesale models. The MX Series BNG also delivers advanced features such as hierarchical queuing, granular QoS, and dynamic multilayer service activation.

Broad Business Edge Capabilities

The MX Series provides a comprehensive VPN toolkit that enables feature-rich, standards-based, secure interworking and streamlined operations needed to help you reduce expenses and enable innovative business services. In addition to basic L3 VPN, L2 VPN, and VPLS, enhanced VPN service support includes QoS prioritized VPN traffic for voice and video, VPN-aware multicast and firewall services that leverage technologies such as LDP-BGP VPLS interworking, point-to-multipoint label-switched paths (P2MP LSPs), BGP-based multicast L3VPN, L2 VPN interworking to connect dissimilar L2 access networks, MPLS plug-and-play, and IPsec/GRE VPNs.

Metro Ethernet Capabilities

The MX Series is Carrier Ethernet 2.0 certified and supports metro Ethernet and aggregation solutions with a full suite of routing and switching features, allowing you to choose the deployment model that best fits your business and technical needs. The MX Series can be flexibly deployed as an IP/IP VPN edge router, VPLS provider edge router (VPLS-PE), MPLS label-switching router (LSR), L2 switch, or L3 router in mobile, fixed, and cable networks.

Universal SDN Gateway Capabilities

Supporting a wide range of SDN and encapsulation protocols, the MX Series is ideal as an SDN universal gateway to bridge between physical and virtual networks—even networks running different encapsulation or overlay technologies. Examples of supported protocols include Multiprotocol BGP (MBGP), dynamic tunnels using MPLS-over-GRE or VXLAN encapsulation, virtual routing tables and forwarding (VRF) and EVI (E-VPNs), mechanisms to send traffic between VRF and global routing table based on configuration and policy, and support for NETCONF.



Specifications and Approvals

This section lists basic specifications by platform. For further details, please refer to the hardware installation manuals at www.juniper.net/techpubs/hardware.

Specification	MX240	MX480	MX960
Dimensions and Power			
Physical dimensions (W x H x D)	17.5 x 8.7 x 23.8 in (44.5 x 22.1 x 60.5 cm)	17.5 x 14 x 23.8 in (44.5 x 35.6 x 60.5 cm)	17.5 x 27.8 x 23.5 in (44.5 x 70.5 (16 RU) x 59.7 cm)
Weight (lb/kg) fully configured	130 lb/59 kg	180 lb/81.7 kg	334 lb/151.6 kg
Mounting	Front or center	Front or center	Front or center
Power (DC/AC)	-40 to -72 V DC 100 to 240 V AC	-40 to -72 V DC 100 to 240 V AC	-40 to -72 V DC 200 to 240 V AC

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	MX240	MX480	MX960
DC Chassis	MX240BASE-DC, MX240BASE3-DC	MX480BASE-DC, MX480BASE3-DC	MX960BASE3-DC; MX960BASE-DC
AC Chassis	MX240BASE-AC, MX240BASE3-ACH, MX240BASE3-ACL	MX480BASE-AC, MX480BASE3-AC	MX960BASE3-AC; MX960BASE-AC
MPC			
MX-MPC1-3D	MPC1 with port queuing; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC1-3D-Q	MPC1 with per-IFL HQoS, 128,000 queues (maximum 64,000 egress); includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC1-3D-Q-R-B	MX-MPC1-3D-Q line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC1-3D-R-B	MX-MPC1-3D line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC1E-3D	Enhanced MPC1, port queuing; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC1E-3D-Q	Enhanced MPC1, per-IFL HQoS, 128,000 queues (max 64,000 egress); includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC1E-3D-Q-R-B	MX-MPC1E-3D-Q line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC1E-3D-R-B	MX-MPC1E-3D line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC2-3D	MPC2 with port queuing; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2-3D-EQ	MPC2 with per-IFL HQoS, 512,000 queues; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2-3D-EQ-R-B	MX-MPC2-3D-EQ line card bundle, includes full scale L3, L2 and L2.5 features		
MX-MPC2-3D-Q	MPC2 with per-IFL HQoS, 256,000 queues (max 128,000 egress); includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2-3D-Q-R-B	MX-MPC2-3D-Q line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC2-3D-R-B	MX-MPC2-3D line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC2E-3D	Enhanced MPC2 with port queuing; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2E-3D-EQ	Enhanced MPC2 with per-IFL HQoS, 512,000 queues; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2E-3D-EQ-R-B	MX-MPC2E-3D-EQ line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC2E-3D-P	Enhanced MPC2 with 1588v2, port queuing; includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2E-3D-P-Q-B	MX-MPC2E-3D-P line card bundle; includes 1588v2, per-IFL HQoS, 256,000 queues (maximum 128,000 egress), full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2E-3D-P-Q-R-B	MX-MPC2E-3D-P line card bundle; includes 1588v2, per-IFL HQoS, 256,000 queues (maximum 128,000 egress), full scale L3, L2, and L2.5 features		
MX-MPC2E-3D-P-R-B	MX-MPC2E-3D-P line card bundle; includes 1588v2, full scale L3, L2, and L2.5 features		
MX-MPC2E-3D-Q	Enhanced MPC2 with per-IFL HQoS, 256,000 queues (maximum 128,000 egress); includes full scale L2/L2.5 and reduced scale L3 features		
MX-MPC2E-3D-Q-R-B	MX-MPC2E-3D-Q line card bundle; includes full scale L3, L2, and L2.5 features		
MX-MPC2E-3D-R-B	MX-MPC2E-3D line card bundle; includes full scale L3, L2, and L2.5 features		
MPC2E-3D-NG	Next-generation MPC2E with upgraded CPU and memory. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5 and reduced scale L3 features. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by MPC1E and MPC2E.		
MPC2E-3D-NG-IR-B	Next-generation MPC2E line card bundle. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 features and up to 16 L3VPNs per MPC. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by MPC1E and MPC2E.		

Model Number	Description
MPC2E-3D-NG-R-B	Next-generation MPC2E line card bundle. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 and L3VPN features. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by MPC1E and MPC2E.
MPC2E-3D-NG-Q	Next-generation MPC2E with upgraded CPU and memory. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, and reduced scale L3 features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by MPC1E and MPC2E.
MPC2E-3D-NG-Q-IR-B	Next-generation MPC2E line card bundle. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 and up to 16 L3VPN features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by MPC1E and MPC2E.
MPC2E-3D-NG-Q-R-B	Next-generation MPC2E line card bundle. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by MPC1E and MPC2E.
MX-MPC3E-3D	MPC3 with support for 100GbE, 40GbE, and 10GbE interfaces, L2.5 features, optics sold separately
MX-MPC3E-3D-R-B	MPC3E with support for 100GbE, 40GbE, and 10GbE interfaces, includes full scale L2, L3, L3VPN features, optics sold separately
MPC3E-3D-NG	Next-generation MPC3E with upgraded CPU and memory. Offers full feature parity with MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5 and reduced scale L3 features. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by MPC1E, MPC2E, and MPC3E.
MPC3E-3D-NG-IR-B	Next-generation MPC3E line card bundle. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5 and L3 features and up to 16 L3VPNs per MPC. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by the MPC1E, MPC2E, and MPC3E.
MPC3E-3D-NG-R-B	Next-generation MPC3E line card bundle. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 and L3VPN features. Flexible queuing option enables hierarchical QoS support with up to 32,000 total queues. Supports all MICs supported by the MPC1E, MPC2E, and MPC3E.
MPC3E-3D-NG-Q	Next-generation MPC3E with upgraded CPU and memory. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5 features, reduced scale L3 features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by the MPC1E, MPC2E, and MPC3E.
MPC3E-3D-NG-Q-IR-B	Next-generation MPC3E line card bundle. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5, L3 and up to 16 L3VPN features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by the MPC1E, MPC2E, and MPC3E.
MPC3E-3D-NG-Q-R-B	Next-generation MPC3E line card bundle. Offers full feature parity with the MPC1E, MPC2E, and MPC3E. Includes full scale L2/L2.5 features, L3 features, and hierarchical QoS with up to 512,000 queues per slot. Supports all MICs supported by the MPC1E, MPC2E, and MPC3E.
MPC-3D-16XGE-SFPP	16x10GbE ports with L2.5 features, optics sold separately
MPC-3D-16XGE-SFPP-R-B	16x10GbE ports with full scale L3, L2, and L2.5 features, optics sold separately
MPC4E-3D-2CGE	2x100GbE and 8x10GbE ports, full scale L2/L2.5 and reduced scale L3 features
MPC4E-3D-32XGE-SFPP	32x10GbE, full scale L2/L2.5 and reduced scale L3 features
MPC4E-3D-2CGE-8XGE-IRB	2x100GbE and 8x10GbE ports, full scale L2/L2.5, L3 features, up to 16 L3VPNs per MPC
MPC4E-3D-32XGE-IRB	32x10GbE SFPP ports, full scale L2/L2.5, L3 features, up to 16 L3VPNs per MPC
MPC4E-3D-2CGE8XGE-RB	2x100GbE and 8x10GbE ports, full scale L2/L2.5, L3 and L3VPN features
MPC4E-3D-32XGE-RB	32XGbE SFPP ports, full scale L2/L2.5, L3 and L3VPN features
MPC5E-100G10G	2-port 100GbE and 4-port 10GbE; Includes full scale L2/L2.5 and reduced scale L3 features, optional license permits up to 32,000 queues with HQoS.
MPC5E-100G10G-IRB	2-port 100GbE and 4-port 10GbE; includes full scale L2/L2.5, L3 features and up to 16 L3VPN instances, optional license permits up to 32,000 queues with HQoS.
MPC5E-100G10G-RB	2-port 100GbE and 4-port 10GbE; includes full scale L2/L2.5, L3 and L3VPN features, optional license permits up to 32,000 queues with HQoS.
MPC5E-40G10G	6-port 40GbE or 24-port 10GbE; includes full scale L2/L2.5 and reduced scale L3 features, optional license permits up to 32,000 queues with HQoS.
MPC5E-40G10G-IRB	6-port 40GbE or 24-port 10GbE; includes full scale L2/L2.5, L3 features and up to 16 L3VPN instances, optional license permits up to 32,000 queues with HQoS.

Model Number	Description
MPC5E-40G10G-RB	6-port 40GbE or 24-port 10GbE; includes full scale L2/L2.5, L3 and L3VPN features, optional license permits up to 32,000 queues with HQoS.
MPC5EQ-100G10G	2-port 100GbE and 4-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions; includes full scale L2/L2.5 and reduced scale L3 features.
MPC5EQ-100G10G-IRB	2-port 100GbE and 4-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions; includes full scale L2/L2.5, L3 features and up to 16 L3VPN instances.
MPC5EQ-100G10G-RB	2-port 100GbE and 4-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions; includes full scale L2/L2.5, L3 and L3VPN features.
MPC5EQ-40G10G	6-port 40GbE or 24-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions; includes full scale L2/L2.5 and reduced scale L3 features.
MPC5EQ-40G10G-IRB	6-port 40GbE or 24-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions, includes full scale L2/L2.5, L3 features and up to 16 L3VPN instances.
MPC5EQ-40G10G-RB	6-port 40GbE or 24-port 10GbE with HQoS; supports 1 million queues and 128,000 sessions, includes full scale L2/L2.5, L3 and L3VPN features.
MS-MPC-128	Multiservices MPC supports a variety of licensed applications including Stateful firewall, Carrier-Grade NAT (CGN), and deep-packet inspection (DPI); each purchased separately. MS-MPC occupies a single slot in MX2020, MX2010, MX960, MX480, and MX240.

MIC

MIC3-3D-10XGE-SFPP	MIC with 10x10GbE SFP+ interface
MIC-3D-20GE-SFP	20 ports of 10/100/1000 Ethernet with small form-factor pluggable transceiver (SFP) interfaces
MIC-3D-20GE-SFP-E	20 ports of 10/100/1000 Ethernet with enhanced small form-factor pluggable transceiver (SFP) interfaces
MIC-3D-20GE-SFP-EH	20 ports of 10/100/1000 Ethernet with enhanced and temperature hardened small form-factor pluggable transceiver (SFP) interfaces
MIC-3D-2XGE-XFP	2 10GbE modular interface cards with XFP interfaces
MIC-3D-4XGE-XFP	4 10GbE modular interface cards with XFP interfaces
MIC-3D-40GE-TX	40 ports of 10/100/1000 Ethernet with TX interfaces
MIC3-3D-1X100GE-CFP	MIC with 1x100GbE C form-factor pluggable transceiver (CFP) interface
MIC3-3D-1X100GE-CXP	MIC with 1x100GbE CXP interface
MIC3-3D-2X40GE-QSFPP	MIC with 2x40GbE QSFP+ interfaces
MIC-3D-4CHOC3-2CHOC12	4-port channelized OC3/2-port channelized OC12 (down to DS0) MIC
MIC-3D-4COC3-1COC12-CE	Multirate circuit emulation MIC, 4-port channelized OC3/STM1 (to DS0) or 1-port channelized OC12/STM4 (to DS0)
MIC-3D-4OC3OC12-1OC48	4-port non-channelized OC3-OC12/1-port non-channelized OC48 MIC
MIC-3D-4XGE-XFP	4x10GbE MIC for MX Series (supported on MX-MPC2 line cards)
MIC-3D-8CHDS3-E3-B	8-port channelized DS3 (down to DS0)/non-channelized E3 MIC, 75 ohm mini SMB
MIC-3D-8CHOC3-4CHOC12	High-density multi-rate MIC channelized, 8-port channelized OC3/4-port channelized OC12 (down to DS0) MIC
MIC-3D-8DS3-E3	8-port non-channelized DS3/non-channelized E3 MIC, 75 ohm mini SMB
MIC-3D-8OC3-2OC12-ATM	Multirate 8-port non-channelized ATM OC3/STM1 or 2-port non-channelized OC12/STM4 ATM MIC
MIC-3D-8OC3OC12-4OC48	Multirate 8-port non-channelized OC3-OC12/4-port non-channelized OC48 MIC
MS-MIC-16	Multiservices MIC supports a variety of licensed applications including Stateful firewall, Carrier-Grade NAT (CGN), and deep-packet inspection (DPI); each purchased separately.

Model Number	Description
DPC	
DPCE-R-20GE-2XGE	20-port GbE + 2-port 10GbE DPC with L2+L3 features
DPCE-R-Q-20GE-2XGE	20-port GbE + 2-port 10GbE enhanced queuing DPC with L2+L3 features
DPCE-R-Q-20GE-SFP	20x1GbE L2/L3 capable with enhanced queuing
DPCE-R-2XGE-XFP	2x10GbE Enhanced DPC for MX Series
DPCE-R-40GE-SFP	40x1GbE L2/L3 capable
DPCE-R-Q-40GE-SFP	40x1GbE enhanced queuing DPC for MX Series with L2/L3 features and VLAN-HQoS
DPCE-R-40GE-TX	40-port 10/100/1000 RJ-45 DPC with L2+L3 features
DPCE-X-40GE-SFP	40x1GbE L2+ capable
DPCE-X-Q-40GE-SFP	40x10/100/1000 Ethernet L2/L3 capable with RJ45
DPCE-X-4XGE-XFP	4x10GbE L2+ capable
DPCE-R-4XGE-XFP	4x10GbE Enhanced DPC with L2+L3 features
DPCE-R-Q-4XGE-XFP	4x10GbE queuing DPC with L2/L3 features and VLAN-HQoS
DPCE-X-Q-4XGE-XFP	4x10GbE L2+ capable board with enhanced queuing
MX-FPC2	DPC with 2 slots for type 2 PICs
MS-DPC	Multiservices DPC provides 20 Gbps of service throughput

Routing Engines

RE-S-1300-2048-BB	1.3 GHz CPU and 2 GB memory, base bundle
RE-S-2000-4096-UPG-BB	2 GHz CPU and 4 GB memory, base bundle
RE-S-1300-2048-R	1.3 GHz CPU and 2 GB memory, redundant
RE-S-2000-4096-R	2 GHz CPU and 4 GB memory, redundant
RE-S-1800X2-8G-R	Dual-core 1.8 GHz CPU and 8 GB memory, redundant
RE-S-1800X2-16G-R	Dual-core 1.8 GHz CPU and 16 GB memory, redundant
RE-S-1800X4-8G-R	Quad-core 1.8 GHz CPU and 8 GB memory, redundant
RE-S-1800X4-16G-R	Quad-core 1.8 GHz CPU and 16 GB memory, redundant
RE-S-1800X2-8G-UPG-BB	Dual-core 1.8 GHz CPU and 8 GB memory, upgrade for base bundle
RE-S-1800X2-16G-UPG-BB	Dual-core 1.8 GHz CPU and 16 GB memory, upgrade for base bundle
RE-S-1800X4-8G-UPG-BB	Quad-core 1.8 GHz CPU and 8 GB memory, upgrade for base bundle
RE-S-1800X4-16G-UPG-BB	Quad-core 1.8 GHz CPU and 16 GB memory, upgrade for base bundle
RE-S-1800X4-32G-BB	Quad Core 1.8GHz CPU with 32 GB memory, base bundle
RE-S-1800X4-32G-R	Quad Core 1.8GHz CPU with 32 GB memory, redundant
RE-S-1800X4-32G-S	Quad Core 1.8GHz CPU with 32 GB memory, spare
RE-S-1800X4-32G-UB	Quad Core 1.8GHz CPU with 32 GB memory, upgrade for base bundle
RE-S-1800X4-32G-WS	Quad Core 1.8GHz CPU with 32 GB memory, worldwide version

Switch Board Control

SCB-MX960-BB	SCB for MX240, MX480, and MX960
SCBE-MX-BB	Enhanced Switch Control Board for MX240, MX480, and MX960
SCBE2-MX-BB	Enhanced MX Switch Control Board for MX240, MX480, and MX960

Junos OS

USA	Junos OS
Worldwide	Junos-WW

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.

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