



* Product configuration and appearance may vary

JUNIPER PTX10002-60MR

Fixed configuration router

Product description

[Juniper PTX series packet transport routers](#) transform your network with innovations that deliver unprecedented throughput efficiency at a lower cost per bit. PTX10002-60MR capabilities include:

- **2 RU** fixed configuration system
- **14.4 Tbps** throughput
- **12 x 800GbE** QSFP112-DD or **48 x 100GbE** QSFP56-DD ports
- **ZR/ZR+** Support on 100G, 400G, and 800G ports
- **Express 5** silicon-based system

The PTX10002-60MR extends the PTX routing portfolio to meet and exceed the throughput and scale requirements of carrier-grade networks in an ultra-compact form factor. The PTX10002-60MR supports a myriad of mission-critical network roles, such as core, peering, [data center interconnect \(DCI\)](#), data center edge, metro aggregation, and [AI data center networking](#), for service and cloud providers, and enterprise networks. With its elastic architecture and precise traffic controls, the PTX10002-60MR gives you the freedom to develop and deliver new services anywhere in the network without compromising the service experience.

Product overview

High performance, sustainable, automated WAN and data center solutions help service providers and enterprises react to evolving market conditions quickly. The PTX10002-60MR, based on our custom Express 5 silicon, is integral to our WAN and data center solutions. It empowers you to

- Accelerate service delivery with world-class products supporting innovative architectures
- Deliver massively scalable, sustainable routing solutions for space- and power-constrained provider and enterprise networks
- Reduce TCO with highly flexible, high performance, and sustainable platforms built for the most demanding environments

The evolving landscape

AI training and inference workloads, mobile, video, and cloud services are reshaping network traffic. Traditional, static, manual networks can't keep up, leading to rising TCO and flat profits. Providers need more agility to use resources better, plan faster, and eliminate rigid layers.

Key challenges

Static scale: Backbones carry massive traffic and must scale efficiently. An 800GbE-ready platform with full MACsec support lets operators grow capacity smoothly with an elastic, compact router.

Static architecture: Cloud and virtualized services create unpredictable traffic. Providers need a flexible, programmable platform like the PTX10002-60MR that adapts across the WAN and DC and supports any service.

Power costs: Rising bandwidth drives higher power use. With energy-efficient Express 5 silicon, the PTX10002-60MR delivers high performance with reduced power, space, and carbon footprint.

Product use cases

The PTX10002-60MR brings physical and virtual innovation to service and cloud providers as well as enterprise WAN networks. This router streamlines integration, deploys seamlessly in existing 100GbE WAN environments with a flexible mix of 48 × 100GbE and 12 × 800GbE interfaces. The PTX10002-60MR fixed-configuration router provides an extensible platform to scale out provider and enterprise WAN backbone architectures, ensuring a consistent user experience across geographies. The PTX10002-60MR meets all existing core, peering, DCI,

data center edge, metro aggregation, and AI data center networking requirements, easily fitting into provider and enterprise networks in multiple mission-critical roles, including:

- **Core routing:** The PTX10002-60MR employs a massively scalable yet compact 2U form factor with scalable Border Gateway Protocol (BGP), filters, security with 8M counters; encapsulated IP filtering, sampling, port mirroring, and > 200K transit label-switched path (LSP).
- **Peering:** The PTX10002-60MR is designed for scale-out peering in space- and power-constrained environments, delivering full traffic visibility and advanced L3 services at scale. These include large-scale RIB/FIB, scale BGP, encapsulated IP, flexible filtering, sampling, port mirroring, distributed denial-of-service (DDoS) detection with flex offset filtering, and Corero mitigation.
- **Data center edge:** The PTX10002-60MR is also a flexible data center edge solution supporting: [EVPN/VXLAN](#)/MPLS, expansion to innovative data center technologies, multicast (VXLAN optimized intersubnet multicast [OISM]), stitching, and more.
- **DCI:** The PTX10002-60MR is an excellent data center interconnect router with advanced EVPN, VXLAN, and data center connectivity including EVPN/VXLAN, ECN/PFC, and in-band telemetry. The PTX10002-60MR offers secure in-line MACsec with no compromise in throughput or latency and an extended range enabled by 100GbE ZR/ZR+, 400GbE ZR/ZR+, and 800GbE ZR/ZR+ optics.
- **Metro aggregation:** With advanced L2/L3 services, the compact PTX10002-60MR is also well suited for metro aggregation roles, including CFM/LFM—Y.1731, MC-LAG, hierarchical QoS, BIER, and, SRv6.
- **AI data center networking:** The PTX10002-60MR also offers a high radix routing platform with deep buffers, making it a superior spine or leaf in AI data center networking environments. AI data center networking capabilities include efficient, deep-buffered interfaces, virtual output queueing (VOQ) scheduling, RDMA over Converged Ethernet version 2 (RoCEv2), adaptive load balancing, built-in IPFIX, INT-MD, and more.

Innovations in silicon

Physical innovations at the silicon level enable the PTX10002-60MR fixed-configuration router to boost industry-leading performance and throughput efficiency numbers at optimal power efficiency.

Express 5 silicon

The PTX10002-60MR is powered by the highly scalable, next-generation ASIC in the Express silicon family. Our Express 5 silicon brings industry-leading in-line MACsec (port based and VLAN based) for all interfaces (14.4 Tbps encryption/decryption per chip) with universal multirate QDD800 and QSFP56-DD. Our Express 5 silicon delivers consistent low latency, 8M counters, 8M+ FIB, 100,000+ SR tunnels, 256 AES MACsec encryption supported on all ports, and wire-rate packet performance for IP traffic without sacrificing the optimized system power profile. Preserving the spirit of the previous generation Express silicon family, our Express 5 silicon incorporates a 3D memory architecture into the base design, offering high packet performance per gigabit in the fewest rack units. It also provides dynamic table memory allocation for massive IP routing scale while delivering tremendous power efficiency gains at **< 0.05W/Gbps**.

Features and benefits

Performance is one of the guiding design principles for the PTX series packet transport routers. This focus empowers service providers and enterprise customers with superior scale to match increased traffic levels and network engineering challenges with predictable system latency. Ultimately, this improves the overall service experience, delivers best-in-class resiliency, and helps ensure that services meet strict customer SLAs.

Operational cost efficiency is the other guiding design principle for the PTX series routers, focusing on power, space, and weight—fundamental concerns that impact service providers' operational budget with respect to growing traffic. Elevating the standard for power efficiency, the PTX10002-60MR not only seamlessly supports 800GbE ZR and ZR+ on all QDD ports but also implements industry-leading, power-saving measures.

The router integrates environmental management policies for optics, helping ensure that components like fans operate at optimal speeds based on the specific optics in use.

Table 1. PTX10002-60MR features and benefits

Feature	Feature description					Benefit								
System capacity	The PTX10002-60MR scales to 14.4 Tbps in a single chassis with 60 native ports, featuring flexible interface configuration options:					The PTX10002-60MR gives cloud, service providers and enterprise customers the performance and scalability needed to outpace growing traffic demands. ZR optics support table 800G ZR/ZR+ All 12 QSFP112 DD ports 400G ZR/ZR+ All 12 QSFP112 DD ports 100G ZR/ZR+ All QSFP28 ports Breakout optics support table <table><tr><th>QSFP112-DD</th><th>All ports support breakout</th></tr><tr><td></td><td>2 x 400G, 4 x 200G, 2 x 200G, 4 x 100G, 2 x 100G, 8 x 50G, 4 x 50G, 2 x 50G, 4 x 25G, 4 x 10G</td></tr><tr><th>QSFP28</th><th>Only top ports (12)</th></tr><tr><td></td><td>4 x 25G, 4 x 10G, 1 x 40G</td></tr></table>	QSFP112-DD	All ports support breakout		2 x 400G, 4 x 200G, 2 x 200G, 4 x 100G, 2 x 100G, 8 x 50G, 4 x 50G, 2 x 50G, 4 x 25G, 4 x 10G	QSFP28	Only top ports (12)		4 x 25G, 4 x 10G, 1 x 40G
	QSFP112-DD	All ports support breakout												
		2 x 400G, 4 x 200G, 2 x 200G, 4 x 100G, 2 x 100G, 8 x 50G, 4 x 50G, 2 x 50G, 4 x 25G, 4 x 10G												
	QSFP28	Only top ports (12)												
		4 x 25G, 4 x 10G, 1 x 40G												
	High-speed ports table													
	Port speed	Optical port	No. of ports/board	Total number of Ethernet ports	Maximum port density									
	800 GE	QSFP112-DD	12	12	12									
	400 GE	QSFP112-DD	12 x (2 x 400G dual LC)	24	24									
	400 GE	QSFP112-DD	12 as a native	12	12									
200 GE	QSFP112-DD	12 x (4x200G BO)	48	48										
100 GE	QSFP112-DD	12 x (8x100G BO)	96	144										
100 GE	QSFP28	48	48											
Lower speed ports table														
Port speed	Optical port	No. of ports/board	Total number of Ethernet ports	Maximum port density										
50 GE	QSFP112-DD	12 x (8 x 50G BO) = 96	96	144	2 x 400G, 4 x 200G, 2 x 200G, 4 x 100G, 2 x 100G, 8 x 50G, 4 x 50G, 2 x 50G, 4 x 25G, 4 x 10G									
	QSFP28	24 x (2 x 50G BO) = 48	48											
40 GE	QSFP112-DD	12 x 40G	12	24	QSFP28 Only top ports (12) 4 x 25G, 4 x 10G, 1 x 40G									
40 GE	QSFP28	12 x 40G	12											
25 GE	QSFP112-DD	12 x (4 x 25G BO) = 48	48	96										
25 GE	QSFP28	12 x (4 x 25G)	48											
10 GE	QSFP112-DD	12 x (4 x 10G BO)	48	96										
10 GE	QSFP28	12 x (4 x 10G BO)	48											
High availability (HA) hardware	The PTX10002-60MR is built with hardware redundancy for cooling, power supplies, and forwarding. The platform offers power supply 1+1 redundancy and front-to-back (AFO) fan trays with rotor failure redundancy.					HA is critical for service providers to maintain an always-on infrastructure base and meet stringent SLAs across the core.								
Packet performance	The PTX10002-60MR uses the latest Express 5 silicon that delivers dense 100/400/800GbE. Express 5 silicon also supports MACsec encryption on every interface at port speed.					Exceptional packet processing capabilities help alleviate the challenge of scaling the network as traffic levels increase while optimizing IP/MPLS transit functionality around superior performance and fast deployment.								

Table 1. PTX10002-60MR features and benefits (continued)

Feature	Feature description	Benefit
Compact form factor	With cutting-edge innovation in power and cooling technology, the PTX10002-60MR provides 14.4 Tbps in an ultra-compact 2U form factor with power-optimized scale and efficiency.	Space efficiency is a critical requirement for peering internet exchange points, peering collocations, central offices, and regional networks, especially in emerging markets.
Security	The PTX series packet transport routers use a combination of hardware-based mechanisms, such as MACsec and software-based features like firewall filters and DDoS, to provide scalable security. In-line MACsec is supported on all ports with no compromise in throughput or latency.	In-line data plane delivers MACsec security with no throughput or latency penalties, in addition to control plane security with DDoS.

Table 2. PTX10002-60MR specification

Feature	Description
System throughput	14.4 Tbps
Forwarding capacity	Up to 10 Bpps
Dimension (H x W x D)	2 RU x 445 mm x 564 mm 3.5" x 17.28" x 29.13"
Rack units	2 RU, 800 mm close rack including cables
Weight	55 lb
CPU	Intel® Ice Lake D-1733NT, 8 core, 2 GHz
DIMM	4 x DIMM socket, 32 GB/DIMM
SSD	2 x 200G, NVMe SSD, 22 x 80 mm with doggy door access
Power supply	1+1 AC 2.2 kW and DC 2.2 kW PSU, AC/HVDC/HVAC
AC input	Voltage: 200V to 277V AC, 10A, 50 to 60 Hz
DC input	Voltage: 240V to 380V DC, 10A, –48V to –60V DC, 40A, 48V to 60V DC, 40A
Cooling	3 x 2 RU fan tray, AFO, hot swappable
Packet buffer	16 GB
Timing	PTP Class C, SyncE, 10M Separate in and out and 1 PPS in/out clock
Control plane ports	1 x USB 3.0, 1 x RJ45 MGT, 1 x console
Environmental	Operating temperature: 0°C to 40°C Nonoperating temperature: –40°C to 70°C Humidity: 5% to 90% (noncondensing) Altitude: 0 to 6000 ft

Table 3. PTX10002-60MR software feature table

Feature	Availability
MPLS-TE	Yes
MPLS LSR	Yes
SRv6	Yes
ROCEv2	Yes
Firewall filters ACL	Yes
Adaptive load balancing	Yes
SPRINGv4	Yes
SPRINGv6	Yes
DDoS control plane	Yes
Hierarchical QoS	Yes
JFlow/sFlow®	Yes
BGP FlowSpec, EPE, URPF, L3VPN	Yes
Integrated routing and bridging (IRB)	Yes
Telemetry, NETCONF/YANG	Yes
Zero touch provisioning (ZTP)	Yes
PCEP, BGP-LS	Yes
Fast restoration	Yes
Operation, administration, and maintenance (OAM)	Yes

Front view



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Figure 2. PTX10002-60MR front view

Rear view



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Figure 3. PTX10002-60MR rear view

Management port view



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Figure 4. PTX10002-60MR management port view

Ordering information

Bundle SKU and spare SKUs

SKU	Description
PTX10002-60MR	PTX10002-60MR fully configured system with 2 PSUs (Choose AC/DC) 3 Fans (AFO) and Junos EVO 64-bit
PTX10002-60MR-S	PTX10002-60MR CHASSIS SPARE no PSM/FANs
JNP-2200W-AC2	Juniper AC Power Supply, 2200W, front-to-back airflow, Spare, AC/HVDC/HVAC
JNP-2200W-DC2	Juniper DC Power Supply, 2200W, front-to-back airflow, Spare
JNP10K2-FAN-AFO	PTX10K2 Fan Tray 2RU AFO SPARE

HW support SKUs

SKU	Description
SVC-COR-PTXK260MR	Juniper Care Core Support for PTX10002-60MR
SVC-CP-PTXK260MR	Juniper Care Core Plus Support for PTX10002-60MR
SVC-NDS-PTXK260MR	Juniper Care Next Day Ship Support for PTX10002-60MR
SVC-ND-PTXK260MR	Juniper Care Next Day Support for PTX10002-60MR
SVC-NDCE-PTXK260MR	Juniper Care Next Day Onsite Support for PTX10002-60MR
SVC-SD-PTXK260MR	Juniper Care Same Day Support for PTX10002-60MR
SVC-SD2-PTXK260MR	Juniper Care Same Day 2-hour Support for PTX10002-60MR
SVC-SDCE-PTXK260MR	Juniper Care Same Day Onsite Support for PTX10002-60MR
PAR-SUP-PTXK260MR	PSS Basic Support for PTX10002-60MR
PAR-RTF-PTXK260MR	PSS RTF Support for PTX10002-60MR
PAR-AR5-PTXK260MR	PSS AR5 Support for PTX10002-60MR
PAR-NDS-PTXK260MR	PSS Next Day Ship Support for PTX10002-60MR
PAR-ND-PTXK260MR	PSS Next Day Support for PTX10002-60MR
PAR-NDCE-PTXK260MR	PSS Next Day Onsite Support for PTX10002-60MR
PAR-SD-PTXK260MR	PSS Same Day Support for PTX10002-60MR
PAR-SDCE-PTXK260MR	PSS Same Day Onsite Support for PTX10002-60MR

Software license SKUs

SKU	Description
S-PTX-8C-W-A1-1	SW, PTX, 800G, WAN Adv, w/ CS, 1YR
S-PTX-8C-W-A1-3	SW, PTX, 800G, WAN Adv, w/ CS, 3YR
S-PTX-8C-W-A1-5	SW, PTX, 800G, WAN Adv, w/ CS, 5YR
S-PTX-8C-W-A1-P	SW, PTX, 800G, WAN Adv, w/o CS, PRPL
S-PTX-8C-W-P1-1	SW, PTX, 800G, WAN Prem, w/ CS, 1YR
S-PTX-8C-W-P1-3	SW, PTX, 800G, WAN Prem, w/ CS, 3YR
S-PTX-8C-W-P1-5	SW, PTX, 800G, WAN Prem, w/ CS, 5YR
S-PTX-8C-W-P1-P	SW, PTX, 800G, WAN Prem, w/o CS, PRPL
S-PTX-8C-DC-A2-1	SW, PTX, 800G, DC Adv, w/ CS, 1YR
S-PTX-8C-DC-A2-3	SW, PTX, 800G, DC Adv, w/ CS, 3YR
S-PTX-8C-DC-A2-5	SW, PTX, 800G, DC Adv, w/ CS, 5YR
S-PTX-8C-DC-A2-P	SW, PTX, 800G, DC Prem, w/o CS, PRPL
S-PTX-8C-SCALE-1	SW, PTX, Scale, w/ CS, 1YR
S-PTX-8C-SCALE-3	SW, PTX, Scale, w/ CS, 3YR
S-PTX-8C-SCALE-5	SW, PTX, Scale, w/ CS, 5YR
S-PTX-8C-SCALE-P	SW, PTX, Scale, w/o CS, PRPL

Software support SKUs for perpetual license

SKU	Description
SVC-COR-PTX-8C-WA1	JNPR Care Core Supt S-PTX-8C-W-A1-P
SVC-COR-PTX-8C-WP1	JNPR Care Core Supt S-PTX-8C-W-P1-P
SVC-COR-PTX-8C-SCL	JNPR Care Core Supt S-PTX-8C-SCALE-P
SVC-COR-PTX-8C-DA2	JNPR Care Core Supt S-PTX-8C-DC-A2-P
PAR-SUP-PTX-8C-WA1	PSS Basic Supt S-PTX-8C-W-A1-P
PAR-SUP-PTX-8C-WP1	PSS Basic Supt S-PTX-8C-W-P1-P
PAR-SUP-PTX-8C-SCL	PSS Basic Supt S-PTX-8C-SCALE-P
PAR-SUP-PTX-8C-DA2	PSS Basic Supt S-PTX-8C-DC-A2-P

Environmental safety requirements for chassis

- GR-3160-CORE (DC NEBS)
- ETSI EN 300 019: Environmental conditions and environmental tests for telecommunications
- ETSI EN 300 019-2-1 storage
- ETSI EN 300 019-2-2 transportation
- ETSI EN 300 019-2-3 stationary use at weather-protected locations

Safety and compliance safety

- CAN/CSA-C22.2 No. 62368-1 and 60950-1
- UL 62368-1 and 60950-1
- IEC 62368-1
- CFR, Title 21, Chapter 1, Subchapter J, Part 1040
- REDR c 1370 OR CAN/CSA-E 60825-1—Part 1
- IEC 60825-1
- IEC 60825-2

Electromagnetic compatibility

- FCC 47 CFR Part 15
- ICES-003 / ICES-GEN
- BS EN 55032
- BS EN 55035
- EN 300 386 V1.6.1
- EN 300 386 V2.2.1
- BS EN 300 386
- EN 55032
- CISPR 32
- EN 55035
- CISPR 35
- IEC/EN 61000 series
- IEC/EN 61000-3-2
- IEC/EN 61000-3-3
- AS/NZS CISPR 32
- VCCI-CISPR 32
- BSMI CNS 15936
- KS C 9835 (Old KN 35)
- KS C 9832 (Old KN 32)
- KS C 9610
- BS EN 61000 series
- Customer-specific compliance statements
 - GR-1089-Core, Issue 8

Environmental compliance

- Restriction of Hazardous Substances (RoHS) 6/6
- Titanium PSU efficiency
- Recycled material
- Waste electronics and electrical equipment (WEEE)
- Registration, evaluation, authorisation and restriction of chemicals (REACH)
- China RoHS

Telco

– Common Language Equipment Identifier (CLEI) code

Warranty

For warranty information, visit [our support page](#).

Note

Virtual PTX10002-60MR is available for lab evaluations of PTX features and capabilities. To run virtual PTX in a test environment, contact your local HPE representatives for more information.

About HPE

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