

PTX1000, PTX10001, PTX10002, AND PTX10003 FIXED-CONFIGURATION PACKET TRANSPORT ROUTERS

Product Overview

Changing market dynamics have intensified the challenge of accommodating growth with traditional products and architectures. Juniper's secure and automated multicloud solution helps cloud-based networks quickly react to these evolving conditions, accelerating service delivery with world-class products and innovative architectural components. PTX Series Packet Transport Routers with custom ExpressPlus silicon are an integral part of this solution, delivering a massively scalable and efficient core architecture across space- and power-constrained service provider and enterprise networks, reducing TCO with innovative, highly flexible, high-performance platforms that are easy to deploy.

Product Description

Juniper Networks® PTX Series Packet Transport Routers transform the core network with physical and virtual innovations that deliver unprecedented scale at a low cost. Three fixed-configuration platforms are available: the PTX1000 Packet Transport Router, the industry's first 2 U packet transport routing device; the PTX10001 Packet Transport Router, the industry's first 1 U packet transport device optimized for cost-optimized transit routing, the PTX10002 Packet Transport Router, a second-generation device that doubles the density of the PTX1000 with Juniper Networks ExpressPlus™ silicon in addition to the PTX10003, the industry's first 3U 400-GbE enabled packet transport routing device. These packet transport routers give cloud and communication providers the freedom to develop and deliver new virtualized services anywhere in the network. They can also create an elastic architecture with precise traffic control without compromising the service experience.

The Evolving Landscape

New traffic dynamics such as mobility, video, and cloud-based services are transforming traditional network patterns and topologies. Stratified, statically designed, and manually operated networks must evolve to support the constantly growing volumes of traffic quickly and economically. Many operators have seen their profits stagnate and TCO grow under the burden that these growing traffic volumes are imposing. Service providers need to become more agile in order to optimize their existing network resources, shorten planning cycles, and remove rigid network layers.

Operators are facing the following challenges under the current environment:

- **Static scale:** The cloud and communication providers' backbone handles the full weight of network traffic. Therefore, it is paramount that the core network be able to grow organically along with traffic to meet escalating demands. 400-GbE, inline MACsec, Silicon, system, and SDN innovations for the core empower service providers to scale faster than the traffic in an elegant, elastic, redundant package—without requiring forklift upgrades.
- **Static architecture:** Virtualized services and the explosion of cloud-based applications are creating increasingly unpredictable traffic patterns. To handle this unpredictability, service providers need a dynamic, scale-out architecture across all layers to create programmable, traffic-optimized networks that support any service, anywhere.
- **Power costs:** For cloud and communication providers, the operational cost of transmitting a packet through the core is less than the cost of the power required to move that packet. In fact, projections suggest that over a few short years, the total power draw will exceed the cost of deploying the entire network infrastructure. Efficient power utilization by the core router requires a holistic ground-up engineering approach.

- **Facility limitations:** Service providers cannot grow their facilities exponentially forever. They need innovations that provide a low-touch deployment model optimized around space availability, facility power requirements, and floor weight thresholds. Transport-oriented central office locations have the added burden of meeting European Telecommunications Standards Institute (ETSI) standard depth. Any transit router innovation must operate within these constraints.

In order to address these challenges, cloud and communication providers need an innovative core router that satisfies three defining principles: performance, deployability, and SDN programmability. The PTX1000, PTX10001, PTX10002 and PTX10003 fixed-configuration packet transport routers provide the foundation for a scale-out core backbone architecture, ensuring a consistent user experience across geographies. The PTX1000, PTX10001, PTX10002 and PTX10003 meet all existing traditional core requirements, easily fitting into cloud and communication provider networks that require transit-focused IP/MPLS applications such as Internet peering, scale-out metro and backbone topologies, and label-switching router (LSR) optimized deployments.

The PTX10001, which offers MACsec on all 10GbE, 40GbE, and 100GbE interfaces, is designed for low-buffer, low-forwarding information base (FIB), low-power, and high-density LSR core applications.

Architecture and Key Components

The PTX1000, PTX10001, PTX10002 and PTX10003 fixed-configuration packet transport routers bring physical and virtual innovation to the service provider core network, addressing concerns about operational expenditures while scaling organically to keep pace with growing traffic demands with the following features:

- **Core routing:** The PTX1000, PTX10001, PTX10002, and PTX10003 employ a massively scalable (3+ Tbps/U) yet compact 1, 2, or 3 U form factor.
- **Data Center Interconnect (DCI):** The routers offer inline MACsec, with no compromise in throughput or latency.
- **Peering:** The PTX1000 provides up to 3 million FIB and the PTX10002 provides up to 2 million FIB, with both models providing 20+ million routing information base (RIB) in a 2 U footprint. The PTX10003 provides up to 4 million FIB and the same peering capability with dense 100/200/400GbE and inline MACsec in a 3 U footprint.
- **LSR P functions:** The PTX10001 provides scalable, cost-optimized, and secure P functions.

Physical innovations at the core silicon level enable the PTX Series fixed-configuration routers to reduce OpEx. Powered by ExpressPlus silicon, these devices build upon the Juniper Networks Junos® Express silicon concepts of low consistent latency and wire-rate packet performance for both IP traffic and MPLS transport, without sacrificing the optimized system power profile. These concepts are incorporated into the PTX Series design along with full IP functionality, preserving the spirit of the original Junos Express chipset. The ExpressPlus silicon is the first purpose-built telecommunications silicon to engineer a 3D memory architecture into the base design for more than 1.6 billion filter operations per second, dynamic table memory allocation for mammoth IP routing scale, and enormous power efficiency gains. While the PTX10001 has inbuilt MACsec, it does not have external memory. The PTX10003 supports inline MACsec on all interfaces using 10/40/100GbE.

While the ability to meet service provider needs for performance, deployability, and SDN control begins with the silicon, the integration of optical transport with 100GbE-coherent technology further improves the economics of the core network. With PTX Series Packet Transport Routers powered by ExpressPlus silicon, service providers can now deploy an architecture with the efficiency of a lean-core network featuring Juniper Networks NorthStar Controller, a robust, full-featured Internet backbone router. The ExpressPlus silicon also allows service providers to deploy a converged regional IP/MPLS core router with integrated 100GbE coherent transport for superior performance, elegant deployment, and SDN programmability.

PTX1000, PTX10001, PTX10002, and PTX10003 Fixed-Configuration Packet Transport Routers

PTX1000

The PTX1000, with its rich IP/MPLS feature set, lets service providers organically distribute peering points throughout the network without sacrificing performance and deployability—the main contributors to eroding TCO for service providers when peering. The PTX1000 expands the applications scope that the PTX Series architecture addresses, enabling service providers to implement a distributed core architecture for interconnecting growing cloud services. Service providers can distribute peering points to match traffic demand with an optimized core router without sacrificing performance or deployability. The PTX1000 is a first-generation fixed-configuration core router in a compact, 2 U form factor, making it easily deployable in space-constrained Internet exchange locations, remote central offices, and embedded peering points anywhere in the network, including cloud-hosted services.

The PTX1000 operates at 2.88 Tbps in a fixed core router configuration and supports flexible interface configuration options, including 288 10GbE ports via a quad small form-factor pluggable plus transceiver (QSFP+) breakout, 72 40GbE ports via QSFP+, and 24 100GbE ports via QSFP28.

PTX10001

The PTX10001 is a MACsec-enabled LSR core router featuring a compact, 1 U form factor that is easy to deploy in space-constrained backbone environments. Operating at 3.6 Tbps in a fixed core router configuration, the PTX10001 supports flexible interface options, offering 36 physical QSFP28 100GbE ports, 36 QSFP+ 40GbE ports, and 144 10GbE ports via QSFP+ breakout cables. MACsec is enabled on all interfaces.

PTX10002

The PTX10002 is a second-generation PTX Series fixed-configuration core router featuring a compact, 2 U form factor that is easy to deploy in space-constrained Internet exchange locations, remote central offices, and embedded peering points throughout the network, including cloud-hosted services.

The PTX10002 operates at 6 Tbps in a fixed core router configuration. It supports flexible interface configuration options, offering 60 physical quad small form-factor pluggable 28 (QSFP28) 100GbE ports, 60 QSFP+ 40GbE ports, and 192 10GbE ports via QSFP+ breakout cables.

PTX10003

The PTX10003 is a fixed-configuration core router featuring a compact, 3 U form factor that is easy to deploy in space-constrained Internet exchange locations, remote central offices, and embedded peering points throughout the network, including cloud-hosted services. The PTX10003 uniquely addresses power-constrained environments by providing unprecedented power efficiency of 0.2 watts/Gbps. Two versions of the PTX10003 are available, supporting 8 Tbps and 16 Tbps respectively in a 3 U footprint.

Operating in a fixed core router configuration, the 8 Tbps model features flexible interface configuration options with universal multi-rate QSFP-DD for 100GbE/400GbE/FlexE to support 160 (QSFP+) 10GbE ports, 80 (QSFP28) 100GbE ports, 32 (QSFP28-DD) 200GbE ports, and 16 (QSFP56-DD) 400GbE ports.

The 16 Tbps model also offers universal multi-rate QSFP-DD for 100GbE/400GbE/FlexE to support 320 (QSFP+) 10GbE ports, 160 (QSFP28) 100GbE ports, 64 (QSFP28-DD) 200GbE ports, and 32 (QSFP56-DD) 400GbE ports.

ExpressPlus and Express-Based Silicon

The PTX1000 and PTX10002 are powered by ExpressPlus silicon, delivering predictable IP/MPLS packet performance and functionality. The PTX10003 is powered by functionally equivalent ExpressPlus Silicon to support high-density 100/200/400GbE interfaces and inline MACsec with no performance penalty while delivering the same IP/MPLS functionality. ExpressPlus silicon eliminates the complex sawtooth packet profile found in elaborate over-engineered network processing units (NPUs) deployed in other core routers. This delivers the peering scale (up to 3 million FIB and up to 20 million RIB, also known as forwarding and routing tables, respectively) required to match expanding traffic demands.

The PTX10001 is powered by Express-based silicon, with low buffer and low latency, delivering predictable IP/MPLS packet performance and functionality. The Express-based silicon is a low-buffer ASIC that offers the lowest LSR core latency in the market.

Features and Benefits

Performance is one of the guiding design principles for the PTX Series Packet Transport Routers. This focus empowers service providers with superior scale to match increased traffic levels and network engineering challenges with predictable system latency to improve the overall service experience, deliver best-in-class resiliency, and ensure that services meet strict customer service-level agreements (SLAs). Deployability 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.

Infinite programmability with automation and telemetry brings virtual innovations to the service provider core, while the NorthStar Controller is an open, standards-based solution that optimizes both the IP layer and the transport layer with precise SDN control, allowing service providers to automate and scale operations.

Table 1 summarizes the features available on the fixed-configuration PTX Series Packet Transport Routers.

Table 1: Fixed-Configuration PTX Series Features and Benefits

Feature	Feature Description	Benefit
System capacity	The PTX1000 scales to 3 Tbps in a single chassis, breaking out into 288 10GbE, 72 40GbE, and 24 100GbE interfaces. The PTX10001 scales up to 3.6 Tbps in a single chassis, breaking out into 144 10GbE, 36 40GbE, and 36 100GbE interfaces. The PTX10002 scales to 6 Tbps in a single chassis, breaking out into 192 10GbE, 60 40GbE, and 60 100GbE interfaces. The PTX10003 8 Tbps model scales to 8 Tbps is a single chassis, breaking out into 160 10GbE, 80 100GbE, 32 200GbE, and 16 400GbE interfaces. The PTX10003 16 Tbps model scales to 16 Tbps in a single chassis, breaking out into 320 10GbE, 160 100GbE, 64 200GbE, and 32 400GbE interfaces.	The PTX1000, PTX10001, PTX10002, and PTX10003 give cloud and service providers the performance and scalability needed to outpace growing traffic demands.
High availability (HA) hardware	The PTX1000, PTX10001, PTX10002 and PTX10003 are built with hardware redundancy for cooling, power supplies, and forwarding.	HA is critical for service providers to maintain an always-on infrastructure base and meet stringent SLAs across the core.
Packet performance	The PTX1000 and PTX10002 include groundbreaking ExpressPlus silicon, empowering them with unparalleled packet processing for both full IP functionality and MPLS transport, leveraging a revolutionary 3D memory architecture. The PTX10001 uses Express-based silicon, one of the industry's highest density, lowest latency, and lowest buffer solutions. The PTX10003 uses a newer version of ExpressPlus silicon that delivers inline MACsec on all ports and dense 100/400GbE.	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 elegant deployability. The PTX10001 is tailored for LSR core router applications, with support for more than 128,000 LSP.
Ultra-compact 1 U, 2 U and 3 U form factor	With cutting-edge innovation in power and cooling technology, the PTX10002 is the only fixed-configuration core router that provides 6 Tbps of capacity in a 2 U form factor. The PTX1000 provides 2.88 Tbps of capacity in a 2 U form factor. The PTX10001 is the first 1 U LSR router with MACsec built in. The PTX10003 provides up to 16 Tbps of capacity in a 3 U form factor.	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 like MACsec and software-based features like firewall filters and DDoS to provide scalable security.	Inline data plane MACsec security with no throughput or latency penalties in addition to control plane security with DDoS.



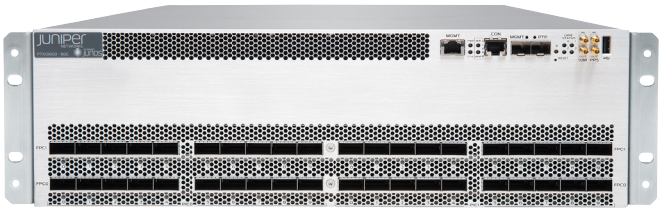
PTX1000 Packet Transport Router



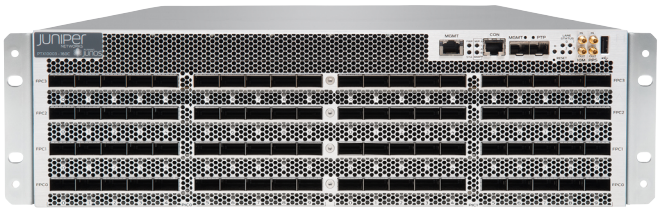
PTX10001 Packet Transport Router



PTX10002 Packet Transport Router



PTX10003-80C Packet Transport Router



PTX10003-160C Packet Transport Router

PTX Series Fixed-Configuration Routers Specifications

Hardware	PTX1000	PTX10001	PTX10002	PTX10003 (8T)	PTX10003 (16T)
System throughput	3 Tbps	3.6 Tbps	6 Tbps	8 Tbps	16 Tbps
Forwarding capacity	Up to 2 Bpps	Up to 2 Bpps	Up to 4 Bpps	Up to 5.3 Bpps	Up to 10.6 Bpps
Max. 10GbE port density	288	144	192	160	320
Max. 40GbE port density	72	36	60	40	80
Max. 100GbE port density	24	36	60	80	160
Max 200GbE port density	-	-	-	32	64
Max 400GbE port density	-	-	-	16	32
Dimension (WxHxD)	17.4 x 3.46 x 31 in (44.2 x 8.8 x 78.7 cm)	17.36 x 1.72 x 25.92 in (44.09 x 4.3 x 65.83 cm)	17.4 x 3.46 x 31 in (44.2 x 8.8 x 78.7 cm)	17.4 x 5.25 x 31 in (44.2 x 13.3 x 78.7 cm)	17.4 x 5.25 x 31 in (44.2 x 13.3 x 78.7 cm)
Rack units	2 U	1 U	2 U	3 U	3 U
Weight	68 lb (31 kg)	26.8 lb (12.2 kg)	68 lb (31 kg)	88 lb (40 kg)	110 lb (50 kg)
CPU	Intel Quad Core Ivy Bridge 2.5 GHz CPU	Intel Broadwell DE 4 Core 1.6 GHz CPU	Intel Quad Core Ivy Bridge 2.5 GHz CPU	Intel Broadwell CPU with 12 Cores	Intel Broadwell CPU with 12 Cores
RAM	32 Gb SDRAM	24 Gb SDRAM	32 Gb SDRAM	64 Gb SDRAM	64 Gb SDRAM
SSD	64 GBx2	50 GBx2	64 GBx2	200 GBx2	200 GBx2
Maximum power draw	1425 W (AC, DC), 4862 BTU/hr	663 W (AC), 676 W (DC), 2730 BTU/hr	2425 W (AC, DC), 8274 BTU/hr	~2500 W (AC,DC), 8525 BTU/hr	~4000 W (AC.DC), 13640 BTU/hr
Typical power draw	1050 W (AC, DC), 3583 BTU/hr	632 W (AC), 646 W (DC), 2388 BTU/hr	1850 W (AC, DC), 6312 BTU/hr	~1600 W (AC,DC), 5456 BTU/hr	~3100W (AC,DC), 10571 BTU/hr
Power supply	4x1600 watts (AC/DC)	2x850 watts (AC/DC)	4x1600 watts (AC/DC)	2x3000 watts (AC/DC)	4x3000 watts (AC/DC)
Cooling (front-to-back fan)	3 hot-swappable redundant fans	5 (4+1) hot-swappable redundant fans	3 hot-swappable redundant fans	3 hot-swappable redundant fans	5 hot-swappable redundant fans
Packet buffer	24 Gb	48 Mb	24 Gb	64 Gb	128 Gb
Latency	2.5 µs within Packet Forwarding Engine (PFE), 5 µs between PFEs	2 µs	2.5 µs within PFE, 5 us between PFEs	2.5 µs within PFE, 5 us between PFEs	2.5 µs within PFE, 5 us between PFEs
Power Efficiency (watts/ Gbps)	0.4	0.17	0.3	0.2	0.2

PTX1000, PTX10002, PTX10001, PTX10003 Software Feature Table

Feature	PTX1000	PTX10001	PTX10002	PTX10003 (8/16 Tbps)
MPLS-TE	Yes	Yes	Yes	Yes
MPLS LSR	Yes	Yes	Yes	Yes
Firewall filters ACL	Yes	Yes	Yes	Yes
SPRINGv4	Yes	Yes	Yes	Yes
DDoS control plane	Yes	No	Yes	Yes
JFlow/SFlow	Yes	Yes	Yes	Yes
BGP FlowSpec, EPE, URPF, L3VPN	Yes	No	Yes	Yes
Integrated routing and bridging (IRB)	Yes	No	Yes	Yes
Telemetry, NETCONF/YANG	Yes	Yes	Yes	Yes
Zero Touch Provisioning (ZTP)	Yes	Yes	Yes	Yes
PCEP, BGP-LS	Yes	Yes	Yes	Yes
Fast restoration	Yes	Yes	Yes	Yes
Operation, Administration, and Maintenance (OAM)	Yes	Yes	Yes	Yes

Management Interfaces

- 1 small form-factor pluggable transceiver (SFP/SFP+) port or Precision Time Protocol (PTP) Grandmaster
- Fiber (SFP) or 10/100/1000BASE-T (RJ-45) Ethernet management port
- SMB in, SMB out, 10 MHz in, 10 MHz out
- One console port
- USB 2.0 storage interface

Environmental Ranges

- Operating temperature: 32° to 115° F (0° to 46° C)
- Storage temperature: -40° to 158° F (-40° to 70° C)
- Operating altitude: Up to 10,000 ft. (3048 m) (Note: For PTX10001 upto 6,000 ft or 1820 m)
- Relative humidity operating: 5 to 90% (noncondensing)
- Relative humidity nonoperating: 5 to 95% (noncondensing)
- Seismic: Designed to meet GR-63, Zone 4 earthquake requirements

Safety and Compliance

Safety

- CAN/CSA-C22.2 No. 60950-1 Information Technology Equipment—Safety
- UL 60950-1 Information Technology Equipment—Safety
- EN 60950-1 Information Technology Equipment—Safety
- IEC 60950-1 Information Technology Equipment—Safety (all country deviations)
- EN 60825-1 Safety of Laser Products—Part 1: Equipment Classification

Electromagnetic Compatibility

- 47CFR Part 15, (FCC) Class A
- ICES-003 Class A
- EN 55022 Class A
- CISPR 22 Class A
- EN 55024
- CISPR 24
- EN 300 386
- VCCI Class A
- AS/NZA CISPR22 Class A
- KN22 Class A
- CNS 13438 Class A
- EN 61000-3-2
- EN 61000-3-3
- ETSI
- ETSI EN 300 019: Environmental Conditions & Environmental Tests for Telecommunications Equipment
- ETSI EN 300 019-2-1 (2000)—Storage
- ETSI EN 300 019-2-2 (1999)—Transportation
- ETSI EN 300 019-2-3 (2003)—Stationary Use at Weather-protected Locations
- ETSI EN 300 019-2-4 (2003)—Stationary Use at Non-Weather-protected Locations
- ETS 300753 (1997)—Acoustic noise emitted by telecommunications equipment

Environmental Compliance

Restriction of Hazardous Substances (ROHS) 6/6

Silver PSU Efficiency

Recycled material

Waste Electronics and Electrical Equipment (WEEE)

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

China Restriction of Hazardous Substances (ROHS)

Telco

- Common Language Equipment Identifier (CLEI) code

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.

Automated Support and Prevention

Juniper's Automated Support and Prevention consists of an ecosystem of tools, applications, and systems targeted towards simplifying and streamlining operations, delivering operational efficiency, reducing downtime, and increasing your network's ROI running Juniper Networks Junos operating system. Automated Support and Prevention brings operational efficiency by automating several time-consuming tasks such as incident management, inventory management, proactive bug notification, and on-demand EOL/EOS/EOE reports. The Junos Space® Service Now and Service Insight service automation tools are standard entitlements of all Juniper Care contracts.

Warranty

For warranty information, please visit www.juniper.net/support/warranty/.

Ordering Information

Product Number	Description
PTX1000	
PTX1K-72Q-AC	PTX1000 base system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-72Q-DC	PTX1000 base system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-72Q-AC-IR	PTX1000 LSR/peering system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-72Q-DC-IR	PTX1000 LSR/peering system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-72Q-AC-R	PTX1000 full IP system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-72Q-DC-R	PTX1000 full IP system with 24-port 100GbE QSFP28/72-port 40GbE QSFP+/288-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-AC	PTX1000 base system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-DC	PTX1000 base system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-AC-IR	PTX1000 LSR/peering system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-DC-IR	PTX1000 LSR/peering system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-AC-R	PTX1000 full IP system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-36Q-DC-R	PTX1000 full IP system with 12-port 100GbE QSFP28/36-port 40GbE QSFP+/144-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-AC	PTX1000 base system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-DC	PTX1000 base system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-AC-IR	PTX1000 LSR/peering system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-DC-IR	PTX1000 LSR/peering system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-AC-R	PTX1000 full IP system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX1K-18Q-DC-R	PTX1000 full IP system with 6-port 100GbE QSFP28/18-port 40GbE QSFP+/72-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
S-PTX1K-72Q-SCA-UP	PTX1000 scale-up software license to upgrade 72 port system (base to LSR or LSR to full IP)
S-PTX1K-36Q-SCA-UP	PTX1000 scale-up software license to upgrade 36 port system (base to LSR or LSR to full IP)
S-PTX1K-18Q-SCA-UP	PTX1000 scale-up software license to upgrade 18 port system (base to LSR or LSR to full IP)
S-PTX1K-UPG-18Q	PTX1000 software license to add 18 more ports to base system
S-PTX1K-UPG-18Q-IR	PTX1000 software license to add 18 more ports to LSR/peering system
S-PTX1K-UPG-18Q-R	PTX1000 software license to add 18 more ports to full IP system
JPSU-1600W-AC-AFO	PTX1000 1600 W AC power supply
JPSU-1600W-DC-AFO	PTX1000 1600 W DC power supply
PTX1000-FAN-S	PTX1000 fan
PTX10003	
PTX10003-160C-AC	PTX10003-160C base system with 160 100GbE ports or 32 400GbE ports, 4 3000W AC power supplies, 4 power cables, and 5 fan trays, with standard tier right-to-use license
PTX10003-160C-DC	PTX10003-160C base system with 160 100GbE ports or 32 400GbE ports, 4 3000W DC power supplies, and 5 fan trays, with standard tier right-to-use license
PTX10003-80C-AC	PTX10003-80C base system with 80 100GbE ports or 16 400GbE ports, 2 3000W AC power supplies, 2 power cables, and 3 fan trays, with standard tier right-to-use license
PTX10003-80C-DC	PTX10003-80C base system with 80 100GbE ports or 16 400GbE ports, 2 3000W DC power supplies, and 3 fan trays, with standard tier right-to-use license
S-PTX10K3-16T-A1-5	16T PTX10003 Advanced1 tier right-to-use license, 5-year term, with SW support
S-PTX10K3-16T-A2-5	16T PTX10003 Advanced2 tier right-to-use license, 5-year term, with software support
S-PTX10K3-16T-P1-5	16T PTX10003 Premium1 tier right-to-use license, 5-year term, with software support

Product Number	Description
S-PTX10K3-16T-P2-5	16T PTX10003 Premium2 tier right-to-use license, 5-year term, with software support
S-PTX10K3-8T-A1-5	8T PTX10003 Advanced1 tier right-to-use license, 5-year term, with software support
S-PTX10K3-8T-A2-5	8T PTX10003 Advanced2 tier right-to-use license, 5-year term, with software support
S-PTX10K3-8T-P1-5	8T PTX10003 Premium1 tier right-to-use license, 5-year term, with software support
S-PTX10K3-8T-P2-5	8T PTX10003 Premium2 tier right-to-use license, 5-year term, with software support
JNP10003-160C-CHAS	JNP10003-160C spare chassis with 160 100GbE ports or 32 400GbE ports
JNP10003-80C-CHAS	JNP10003-80C spare chassis with 80 100GbE ports or 16 400GbE ports
JNP10003-FAN	Fan tray for 3RU 8T and 16T fixed platforms
JNP-3000W-AC-AFO	AC power supply for JNP10003-160C and JNP10003-80C fixed platforms
JNP-3000W-DC-AFO	DC power supply for JNP10003-160C and JNP10003-80C fixed platforms
PTX10002	
PTX10002-60C-AC	PTX10002 base system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10002-60C-DC	PTX10002 base system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX10002-60C-AC-IR	PTX10002 LSR/peering system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10002-60C-DC-IR	PTX10002 LSR/peering system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX10002-60C-AC-R	PTX10002 full IP system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10002-60C-DC-R	PTX10002 full IP system with 60-port 100GbE QSFP28/60-port 40GbE QSFP+/192-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX10K2-60C-H-AC	PTX10002 base system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10K2-60C-H-DC	PTX10002 base system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays

Product Number	Description
PTX10K2-60C-H-ACIR	PTX10002 LSR/peering system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10K2-60C-H-DCIR	PTX10002 LSR/peering system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
PTX10K2-60C-H-AC-R	PTX10002 full IP system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W AC power supplies, 4 power cables, and 3 fan trays
PTX10K2-60C-H-DC-R	PTX10002 full IP system with 30-port 100GbE QSFP28/30-port 40GbE QSFP+/96-port 10GbE SFP+ with 4 1600 W DC power supplies, 4 power cables, and 3 fan trays
JPSU-1600W-AC-AFO	PTX1000 1600 W AC power supply
JPSU-1600W-DC-AFO	PTX1000 1600 W DC power supply
JNP10002-FAN1	PTX10002 fan
S-PTX10K2-60C-S-UP	PTX10002 scale-up software license to upgrade 60-port system (base to LSR or LSR to full IP)
S-PTX10K2-30C-S-UP	PTX10002 scale-up software license to upgrade 30-port system (base to LSR or LSR to full IP)
S-PTX10K2-15C-S-UP	PTX10002 scale-up software license to upgrade 15-port system (base to LSR or LSR to full IP)
S-PTX10K2-U-15C	PTX10002 software license to add 15 more ports to base system
S-PTX10K2-U-15C-IR	PTX10002 software license to add 15 more ports to LSR/peering system
S-PTX10K2-U-15C-R	PTX10002 software license to add 15 more ports to full IP system
PTX10001	
PTX10001-36C-AO	PTX10001 AC system with 36x100GbE QSFP28/36x40GbE QSFP+/144x10GbE SFP+
PTX10001-36C-DO	PTX10001 DC system with 36x100GbE QSFP28/36x40GbE QSFP+/144x10GbE SFP+
PTX10001-36C-AO-M	PTX10001 AC system with 36x100GbE QSFP28/36x40GbE QSFP+/144x10GbE SFP+ with MACsec
PTX10001-36C-DO-M	PTX10001 DC system with 36x100GbE QSFP28/36x40GbE QSFP+/144x10GbE SFP+ with MACsec
PTX10001-20C-AO	PTX10001 AC system with 20x100GbE QSFP28/20x40GbE QSFP+/80x10GbE SFP+
PTX10001-20C-DO	PTX10001 DC system with 20x100GbE QSFP28/20x40GbE QSFP+/80x10GbE SFP+
JNP10001-16C-PIC	JNP10001 PIC with 16x100GbE/16x40GbE/64x10GbE
S-PTX10001-MACSEC	Software license to enable MACsec on PTX10001 chassis

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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