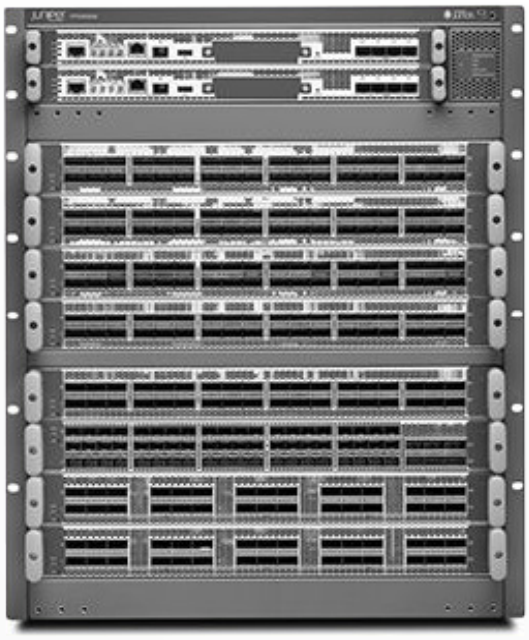
HPE JUNIPER networking

Data sheet



# PTX10000 LINE OF MODULAR ROUTERS

HPE

**Product overview**

Juniper Networks PTX10000 modular routers are designed to meet next-generation requirements in the cloud and AI era. As cloud, AI, and 5G trends accelerate network transformation, WANs continue to face both exponential traffic growth and changing traffic patterns.

The PTX10000 modular router family:

— Sets new benchmarks for scale, flexibility, and reliability

— Provides specialized, high performance custom silicon

— Addresses the requirements of high-density 400GbE or 800GbE-based network infrastructure

# Product description

Changing market dynamics intensify the challenge of accommodating growth with traditional WAN routers and architectures. Juniper Networks PTX10000 line of modular routing platforms provides 800GbE capable, high performance, sustainable, and automated WAN solutions that help providers and enterprises quickly react to evolving conditions and accelerate service delivery with innovative architectures. The PTX10000 modular line of routers, based on HPE custom Express 4 and Express 5 silicon is integral to HPE Juniper Networking automated WAN solutions, delivering massively scalable and sustainable routing capabilities for service provider, cloud provider, and enterprise networks.

With the introduction of Juniper Express 5 ASIC, the PTX10000 line of modular routers delivers no-excuses 800GbE performance along with industry-leading port density of 28.8Tbps full duplex. The PTX10000 line also delivers tremendous versatility supporting 4-, 8-, and 16-slot models for a range of WAN and data center use cases including core, peering, data center interconnect, data center edge, metro aggregation, and AI data center networking, This enables operators to reduce their TCO with highly flexible, high performance, and sustainable platforms built for longevity in the most demanding environments.

The PTX10000 line delivers massive scalability, flexibility, and reliability to help network operators overcome key network challenges related to scale, agility, and investment protection. The key challenges operators face are:

— **Scale**: Providers offer backbone connectivity over a network that requires a large number of label-switched paths (LSPs), whether they are using Segment Routing v6 (SRv6) or RSVP to take advantage of traffic engineering (SR-TE/RSVP-TE) functionality. The control plane signaling path must be able to scale in step with the growth of LSPs. This ability is necessary for primary and backup paths to scale and to support resiliency with fast re-route (FRR) and topology independent loop-free alternates (TI-LFA). In modern networks, the total number of paths needed for backbone connectivity may be several million–presenting a daunting scaling challenge for operators trying to diversify their portfolios by adding a broader scope of connectivity services to cloud or between clouds, or connecting enterprises over VPNs or private lines.

— **Operational flexibility**: Virtualized services and the explosion of cloud-based applications are creating increasingly complex traffic patterns. To handle this complexity, service providers need architectures that are flexible and dynamic across all layers.

— **Investment protection**: Ensuring operators are investing in platforms designed to last has become imperative and it requires leveraging the next generation of industry-leading ASIC improvements. Rip-and-replace strategies and yearly upgrades pose an unacceptable risk to service continuity and network profitability.

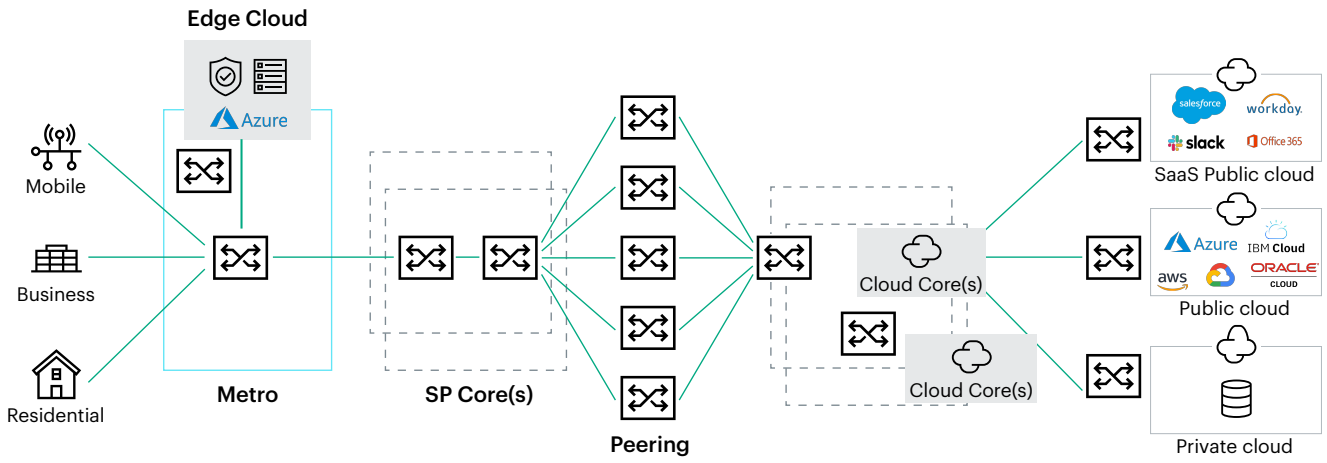



**Figure 1.** The multiple types of PTX10000 line of modular routing platforms deployments

To address these challenges, network operators need a routing platform that delivers scalability, flexibility, and reliability to the network. The PTX10000 line of routers takes high performance networking to the next level, easily fitting into cloud provider, service-provider, and enterprise networks across core, peering, data center interconnect, data center edge, and metro aggregation, as well as AI data center networking roles. (Figure 1).

PTX10000 line of routers are powered by Juniper Express family of ASICs, including Express 5 that enables 800GbE architectures and delivers predictable packet performance and functionality. The unique ASICs family eliminates unnecessary complex packet profiles found in elaborate, over-engineered network processing units required by other core routers.

The PTX10000 line brings physical and virtual innovations to provider networks. These next-generation routers help network operators achieve their business goals while effectively handling current and future traffic demands through automation, optimization, and programmability.

The PTX10000 line combines the best of Juniper Express ASICs with the reliability and familiarity of Junos OS Evolved and the flexibility of a Linux® kernel. PTX10000 routers are comprised of feature-rich, 800GbE-optimized fixed and modular platforms.

## PTX10004, PTX10008, PTX10016 hardware

The PTX10004 (4-slot), PTX10008 (8-slot), and PTX10016 (16-slot)modular routers utilize Juniper Express 4 and Express 5 ASIC-powered line cards that support deep buffers, flexible packet filtering, and bandwidth-demanding WAN and data center architectures.

**Table 1.** PTX10000 modular router chassis options

| | | |
|---|---|---|
| PTX10004 | 4 slots | 7RU |
| PTX10008 | 8 slots | 13RU |
| PTX10016 | 16 slots | 21RU |

The PTX10004, PTX10008, and PTX10016 routers are cloud-scale platforms designed to enable the transition and expansion of dense 400GbE and 800GbE networks. These high-density routers are designed for today's space and power-constrained facilities, supporting line-rate inline Media Access Control Security (MACsec) on all ports up to 800GbE for uncompromised security.

For low bit-rate applications such as 10GbE or 25GbE, PTX10000 line cards offer native SFP+ and SFP28 transceivers support through QSFP adapters: MAM1Q00A-QSA and MAM1Q00A-QSA28. This option enables deployments where 10GbE or 25GbE connectivity over more than 10KM single mode fiber links are required.

These flexible, versatile, and modular routing platforms enable network engineers to build WAN and data center architectures for several distinct roles:

— **Core**: The PTX10000 line allows service providers and cloud providers to build a massively scalable core with hundreds of thousands of LSPs. The routers support seamless transition expansion to 400GbE and 800GbE and conversions from traditional to innovative architectures without forklift upgrades or service disruptions.

— **Peering**: The PTX10000 line is ideal for scaled-up and scaled-out peering deployments with full traffic visibility using 8M+ counters, high RIB and FIB, NS BGP at scale, encapsulated IP filtering, sampling, port mirroring, and DDoS detection with flexible offset filters (Express 5 only) and Corero.

— **Data center edge**: The PTX10000 line provides an agile, pay-as-you-grow approach to ever-increasing bandwidth requirements for the data center edge in the era of cloud-scale networking. With a choice of various overlays and underlays, it is an essential building block of a flexible data center edge solution supporting: EVPN, VXLAN, MPLS, and expansion to innovative data center technologies, such as multicast (VXLAN OISM) and more.

— **Data Center Interconnect (DCI)**: The PTX10000 line is an excellent data center interconnect modular routing platform with advanced EVPN-VXLAN feature-set for data center-to-data center connectivity. The routers have a comprehensive set of features such as ECN, PFC, etc., tailored for interconnecting AI/ML clusters across data centers. In-line MACsec encryption at line-rate ensures that the connection is secure, without compromising the forwarding performance or latency.

— **Metro aggregation**: With advanced Layer 2/3 services enabled by Express 5 silicon, the PTX10000 line is well suited for metro aggregation roles. These capabilities are complemented by rich-OAM (Y.1731), MC-LAG, H-QoS, BIER, and an industry leading scale of SRv6 uSIDs.

— **AI data center networking**: The PTX10000 line provides the highest radix designs with deep buffers, and a cell-based switch fabric makes it ideal for spine or leaf in AI data center networking environments. AI data center networking capabilities include efficient, deep-buffered interfaces, scalable cell-based fabric design, VOQ scheduling, RoCEv2, adaptive load balancing, and more.

## Silicon innovations with Express family ASICs

Continuous innovations in silicon enable the PTX10000 modular routers to accommodate scale-up and scale-out architectures with smooth migration paths as traffic patterns change. HPE custom Express silicon allows adaptive load balancing, data structure sharing, better resource utilization, as well as value-added resources for filtering flexibility—all while lowering cost-per-bit with improved space and power utilization.

The PTX10004, PTX10008, and PTX10016 are powered by the highly-scalable Juniper Express 5 silicon brings industry-leading inline MACsec for all 36x800GbE interfaces at line rate via universal multi-rate QSFP-DD, including dual-LC connectors to operate 72x400GbE mode in dense 400GbE deployments. The Juniper Express 5 silicon delivers consistent low latency, 8M counters, 256 Advanced Encryption Standard (AES) MACsec supported on all ports, and wire-rate packet performance for IP traffic without sacrificing the optimized system power profile. Juniper Express 5 silicon incorporates a high-bandwidth memory (HBM) architecture into the base design, offering the industry's highest packet performance per gigabit in the fewest rack units. It also provides dynamic table memory allocation to gain massive IP routing scale, while delivering power efficiency gains.

## Segment Routing v6 (SRv6)

MicroSID (uSID) technology enhances SRv6 forwarding by reducing the overhead associated with transporting the SID list and by compressing multiple SIDs into a single IPv6 address (128 bit). This provides a scalable and deterministic traffic-engineered forwarding plane to support a broad spectrum of core, peering, metro, and data center use cases. Express 5 silicon-based line cards provide the highest scale of SRv6 uSIDs in the industry, enabling seamless transitions for existing PTX10000 customers and an agile network infrastructure in new PTX10000 deployments.

The ability to address a provider's WAN transport requirements—scale, operational flexibility, sustainability, and SDN control—begins with advanced silicon capabilities. Juniper Express 5 optimally addresses these emerging infrastructure needs.

## Architecture and key components

The PTX10000 line features several key architectural elements that deliver superior resiliency. Dual redundant routing engines (REs) on the PTX10004, PTX10008, and PTX10016 run the Junos OS Evolved operating system, where they manage all routing protocol processes, router interface control, and control plane functions such as chassis component, system management, and user access to the router. In addition, a unique cryptographic digital identity has been added to the Trusted Platform Module (TPM 2.0), which is embedded in the latest generation of REs. This addition enables device attestation and enhances security. REs' processes interact with the Packet Forwarding Engine (PFE) on the line cards via dedicated high-bandwidth management channels, providing a clean separation of the control and forwarding planes.

The PTX10004, PTX10008, and PTX10016 Express silicon-based line cards currently support 10GbE, 25GbE, 40GbE, 100GbE, 400GbE, and 800GbE interfaces. The horizontal line cards in the front of the chassis connect directly to the vertical switch fabric cards in the rear of a chassis via orthogonal interconnects without requiring a midplane. This provides unparalleled investment protection by ensuring a smooth upgrade path to higher speed switch fabric cards as they become available. The midplane-less design improves airflow with a front-to-back design and enables limitless scale.

To maintain uninterrupted operation, the PTX10000 modular chassis fan trays cool the line cards and REs with redundant, variable-speed fans. In addition, the power supplies in the PTX10000 line convert building power to the internal voltage required by the system. All PTX10000 line components are hot-swappable, and all central functions are available in redundant configurations, providing high operational availability by allowing continuous system operation during maintenance or repairs.

## PTX10000 line: Shared hardware components

Key hardware components of the PTX10004, PTX10008, and PTX10016 modular routers include the switch fabrics, REs, and line cards. Key hardware components of the PTX10004, PTX10008, and PTX10016 modular routers include the switch fabrics, REs, and line cards.

**Table 2.** Shared components across PTX modular chassis

| | |
|---|---|
| Switch Fabrics | SF3 (14.4Tbps/slot, Express 4) |
| | SF5 (28.8Tbps/slot, Express 5) |
| Routing Engine | **JNP10K-RE1**: The second-generation RE1 RE features a 10-core 2.2 GHz Intel® processor with memory options of 64 GB or 128 GB and 2x200 GB solid-state drive (SSD) storage. |

**Table 3.** PTX10000 Series Express ASIC-based line cards

| Line card | Bandwidth | Silicon | 100GbE Ports* | 400GbE Ports | 800GbE Ports |
|---|---|---|---|---|---|
| PTX10K-LC1201-36CD (JNP10K-LC1201) | 14.4Tbps | Express 4 | 144 | 36 | |
| PTX10K-LC1202-36MR | 4.8Tbps | Express 4 | 48 | 4 | |
| PTX10K-LC1301-36DD (JNP10K-LC1301)** | 28.8Tbps | Express 5 | 288 | 72 | 36 |

* Represents max no. of ports as a combination of native and break-out
** For PTX10016 some limitations apply. Contact your HPE representative for more information

The line cards also support native MACsec without compromising throughput on any supported interface rated up to 800GbE, providing point-to-point security on Ethernet links. MACsec blocks security threats such as DoS, intrusion, man-in-the-middle, masquerading, passive wiretapping, and playback attacks while securing links for most traffic frames from the Link Layer Discovery Protocol (LLDP), Link Aggregation Control Protocol (LACP), Dynamic Host Configuration Protocol (DHCP), Address Resolution Protocol (ARP), and others. All ports can support 800GbE ZR and ZR+ optics, making it ready for converged optical routing architectures without compromising port density.

### Power

The PTX10004 has three power supply slots, the PTX10008 offers six power supply slots, and the PTX10016 has 10 power supply slots, providing complete flexibility for provisioning and redundancy. Each power supply has its own internal fan for cooling. The PTX10000 line supports both AC and DC power supplies; however, AC and DC supplies cannot be mixed in the same chassis. The second and third generation is designed to support both Express 4 and Express 5 line cards. The AC2 and AC3 power supplies of PTX10000 line routers are high-capacity, high line-voltage models designed to operate with either standard-voltage AC, high-voltage AC (HVAC), or high-voltage DC (HVDC) systems. The AC2 power supplies convert an input voltage between 180VAC to 305 VAC and provide 12.3V DC output, delivering 5000 watts with a single feed and 5500 watts with a dual feed. Built on a single housing platform, the DC power supplies consist of two DC power modules that take 190 VDC to 410 VDC line input via four redundant input power feeds at 60A or 80A.

### Cooling

The PTX10000 line supports front-to-back cooling with air drawn in through the perforations on the REs and the line cards in the front of the platform. The fan trays are in front of the fabric cards and are accessible from the rear of the chassis. Hot air exhausts through the rear of the chassis.

### Chassis management

The PTX10000 line delivers powerful Junos OS Evolved chassis management that allows environmental monitoring and field- replaceable unit (FRU) control. Chassis management provides a faster primary switchover, enhanced power budgeting with a modular power management, automatically reduced power consumption for partially populated systems, granular control over FRU power-on, adaptive cooling, and CPU leveling during monitoring intervals.

### Simplified management

PTX10000 line routers simplify management based on the elegance and simplicity of Junos OS Evolved. Network management applications and tools can configure and/or receive streaming telemetry data using native, OpenConfig, and IETF data models, offering robust protocol analytics for any SDN environment. Junos OS Evolved provides inherent resilience, operational uniformity, and the adaptability required to advance your network. To enable dynamic control and management of network devices through a unified and standardized interface, PTX10000 platforms powered by Junos OS Evolved also support P4 Runtime (P4RT), which empowers the network operating systems with unprecedented flexibility and programmability.

# Features and benefits

Table 4 summarizes the features available on the PTX10004, PTX10008, and PTX10016 routers.

**Table 4.** PTX10000 line features and benefits

| Feature | Feature description | Benefits |
|---|---|---|
| **System capacity and ports** | The line cards provide a broad spectrum of port speeds and densities:<br>— The Express 5 line card enables 36 ports of 800GbE QSFP-DD800 and can enable up to 72 ports of 400GbE or 288 ports of 100GbE per line card with breakout options.<br>— The Express 4 14.4Tbps line card provides 36 ports of 400GbE QSFP56-DD which can also enable up to 144 ports of 100GbE/25GbE/10GbE with breakout options or up to 36 x 40GbE.<br>— The Express 4 4.8Tbps line card provides 4 ports of 400GbE QSFP56-DD and 32 ports of 100GbE QSFP-28 which can also enable either up to 48 ports of 100GbE (including breakout) or up to 144 ports of 25GbE/10GbE. Up to 32 ports of 40GbE can be enabled for 40GbE use cases. | Network operators gain the bandwidth, density, and scale needed to outpace increasing traffic demands. |
| **Packet performance** | Groundbreaking HPE Juniper Networking silicon innovation powers the PTX10000 line with unparalleled packet processing for both full IP and MPLS functionality, thereby leveraging the high-bandwidth memory architecture. | Exceptional packet processing capabilities help alleviate the challenge of scaling the network as traffic increases while optimizing IP/MPLS transit functionality around superior performance and seamless deployment. |
| **Full-scale IP and MPLS routing** | The PTX10000 routers features a rich set of IP/MPLS services, consistent low latency, and wire-rate forwarding at scale while providing the reliability needed to meet strict SLAs. | Peering applications are supported with more than 4 million IPv4 routes and 60 million routing information base (RIB) routing tables, 2400 OSPF adjacencies, and 4000 BGP sessions required to match expanding traffic demands. |
| **Segment Routing (SR)** | Junos OS Evolved supports segment routing including SRv6 with an industry-leading scale of uSIDs, that provides the ability for a trusted source node to specify a forwarding path, other than the normal shortest path, that a particular packet will traverse. | Traffic engineering is enabled at scale with link protection using topology-independent loop-free alternates (TI-LFA) implementation, traffic steering, egress peering engineering, and path verification. |
| **AI data center networking** | The PTX10000 line provides the highest radix with deep buffers and a cell-based switch fabric making it a superior spine or leaf in AI data center networking environments. | AI data center networking capabilities include efficient, deep-buffered interfaces, scalable cell-based fabric design, VOQ scheduling, RoCEv2, adaptive load balancing, and more. |
| **High availability (HA) hardware** | The PTX10000 line is engineered with full hardware redundancy for cooling, power supply, REs, and switch fabric. | HA is a critical requirement for maintaining an always-on infrastructure base to meet stringent SLAs across the core. |
| **High availability software** | The PTX10000 line features a resilient operating system that supports HA features such as graceful RE switchover (GRES) and nonstop active routing (NSR) for high availability. PTX10000 routers support 48ms redundancy switchover under load. | Junos OS Evolved supports HA features that allow software upgrades and changes without disrupting network traffic. |

PTX10004 Packet Transport Router | PTX10008 Packet Transport Router | PTX10016 Packet Transport Router

# Specifications

**Table 5.** PTX10000 line specifications

| Feature | Specifications |
|---|---|
| **PTX10004** | |
| Physical dimensions (W x H x D) | 17.4 x 12.2 x 35 in. (44.2 x 33 x 88.9 cm); 42.2 in. (107.7 cm) depth with EMI door |
| Maximum weight*** | 271.2 lb (116.7 kg) |
| Mounting | Front rack mount |
| Power system rating* | 200–240 VAC/50–60 Hz –48 VDC @ 60 A |
| Typical power consumption** | 8.0 kW, 27.3 kBTU/hr with Express 4 line cards, fully loaded |
| Operating temperature | 32° to 115° F (0° to 46° C) at sea level |
| **PTX10008** | |
| Physical dimensions (W x H x D) | 17.4 x 22.55 x 32 in.(44.2 x 57.76 x 81.28 cm);<br>39.37 in. (100 cm) depth with EMI door |
| Maximum weight*** | 421 lb (191 kg) |
| Mounting | Front rack mount |
| Power system rating* | 200–240 VAC / 50–60 Hz –48 VDC @ 60 A |
| Typical power consumption** | 12.7 kW, 43.3 kBTU/hr with Express 4 line cards, fully loaded |
| Operating temperature | 32° to 115° F (0° to 46° C) at sea level |

* These numbers are power supply input ratings. Actual power usage is much lower.
** Typical power consumption does not include optics power
*** Maximum weight is based on PREM3 configuration

**Table 5.** PTX10000 line specifications (continued)

| Feature | Specifications |
|---|---|
| **PTX10016** | |
| Physical dimensions (W x H x D) | 17.4 x 36.65 x 35 in(44.2 x 93.09 x 88.90 cm);<br>42.40 in (107.7 cm) depth with EMI door |
| Maximum weight*** | 706 lb (320 kg) |
| Mounting | Front rack mount |
| Power system rating* | 200–240 VAC / 50–60 Hz –48 VDC @ 60 A |
| Typical power consumption** | 25.9 kW, 88.3 kBTU/hr with Express 4 line cards, fully loaded |
| Operating temperature | 32° to 115° F (0° to 46° C) at sea level |

* These numbers are power supply input ratings. Actual power usage is much lower.
** Typical power consumption does not include optics power
*** Maximum weight is based on PREM3 configuration

# PTX10000 line ordering information

For more information, please contact your HPE Networks representative.

| Product number | Description |
|---|---|
| **PTX10004 Premium and base units** | |
| PTX10004-PREM3 | PTX10004 redundant 4-slot chassis. Includes 2 REs, 3 AC/HVDC or DC power supplies, 2 fan trays, 2 fan tray controllers, and 6 SF3 switch fabric cards |
| PTX10004-PREM2 | PTX10004 redundant 4-slot chassis. Includes 2 REs, 3 AC/HVDC or DC power supplies, 2 fan trays, 2 fan tray controllers, and 4 SF3 switch fabric cards |
| PTX10004-BASE3 | PTX10004 base 4-slot chassis. Includes 1 RE, 3 AC/HVDC or DC power supplies, 2 fan trays, 2 fan tray controllers, and 3 SF3 switch fabric cards |
| **PTX10008 Premium and base units** | |
| PTX10008-PREM3 | PTX10008 redundant 8-slot chassis bundle. Includes 2 REs, 6 power supplies, 2 fan trays, 2 fan tray controllers, and 6 SF3 switch fabric cards |
| PTX10008-PREM2 | PTX10008 redundant 8-slot chassis bundle. Includes 2 REs, 6 AC/ HVDC/DC power supplies, 2 fan trays, 2 fan tray controllers, and 4 SF3 switch fabric cards |
| PTX10008-BASE3 | PTX10008 base 8-slot chassis. Includes 1 RE, 6 AC/HVDC/DC power supplies, 2 fan trays, 2 fan tray controllers, and 3 SF3 switch fabric cards |
| PTX10008-PREM5 | PTX10008 redundant 8-slot chassis bundle. Includes 2 Routing Engines, 6 Power Supplies, 2 Fan Trays, 2 Fan Tray Controller and 6 SF5 Switch Fabric |
| PTX10008-PREM4 | PTX10008 redundant 8-slot chassis bundle. Includes 2 Routing Engines, 6 Power Supplies, 2 Fan Trays, 2 Fan Tray Controller and 4 SF5 Switch Fabric |
| PTX10008-BASE5 | PTX10008 base 8-slot chassis. Includes 1 RE, 6 AC/HVDC/DC power supplies, 2 fan trays, 2 fan tray controllers, and 3 SF5 switch fabric cards |

# PTX10000 line ordering information (continued)

| Product number | Description |
|---|---|
| **PTX10016 Premium and base units** | |
| PTX10016-PREM3 | PTX10016 redundant 16-slot chassis bundles. Includes 2 REs, 10 power supplies, 2 fan trays, 2 fan tray controllers, and 6 SF3 switch fabric cards |
| PTX10016-PREM2 | PTX10016 redundant 16-slot chassis. Includes 2 REs, 10 AC/ HVDC/DC power supplies, 2 fan trays, 2 fan tray controllers, and 4 SF3 switch fabric cards |
| PTX10016-BASE3 | PTX10016 base 16-slot chassis. Includes 1 RE, 10 AC/HVDC/DC power supplies, 2 fan trays, 2 fan tray controllers, and 3 SF3 switch fabric cards |
| **PTX10000 Routing Engines** | |
| JNP10K-RE1-E-BB | PTX10000/JNP10000 RE X8 with Junos Evolved, 64G, base bundle |
| JNP10K-RE1-E-R | PTX10000/JNP10000 RE X8 with Junos Evolved, 64G, redundant |
| JNP10K-RE1-E | PTX10000/JNP10000 RE X8 with Junos Evolved, 64G |
| JNP10K-RE1-E128-BB | PTX10000/JNP10000 RE X8 with Junos Evolved, 128G, base bundle |
| JNP10K-RE1-E128-R | PTX10000/JNP10000 RE X8 with Junos Evolved, 128G, redundant |
| JNP10K-RE1-E128 | PTX10000/JNP10000 RE X8 with Junos Evolved, 128G |
| **PTX10004 Switch fabric** | |
| JNP10004-SF3-BB | PTX10004/JNP10004 switch fabric card supporting up to 14.4Tbps per line card, base bundle |
| JNP10004-SF3-R | PTX10004/JNP10004 switch fabric card supporting up to 14.4Tbps per line card, redundant |
| JNP10004-SF3 | PTX10004/JNP10004 switch fabric card supporting up to 14.4Tbps per line card |
| **PTX10008 Switch fabric** | |
| JNP10008-SF3-BB | PTX10008/JNP10008 switch fabric card supporting up to 14.4Tbps per line card, base bundle |
| JNP10008-SF3-R | PTX10008/JNP10008 switch fabric card supporting up to 14.4Tbps per line card, redundant |
| JNP10008-SF3 | PTX10008/JNP10008 switch fabric card supporting up to 14.4Tbps per line card |
| JNP10008-SF5-BB | PTX10008/JNP10008 switch fabric card supporting up to 28.8Tbps per line card, base bundle |
| JNP10008-SF5-R | PTX10008/JNP10008 switch fabric card supporting up to 28.8Tbps per line card, redundant |
| JNP10008-SF5 | PTX10008/JNP10008 switch fabric card supporting up to 28.8Tbps per line card |
| **PTX10016 Switch fabric** | |
| JNP10016-SF3-BB | PTX10016/JNP10016 switch fabric card supporting up to 14.4Tbps per line card, base bundle |
| JNP10016-SF3-R | PTX10016/JNP10016 switch fabric card supporting up to 14.4Tbps per line card, redundant |
| JNP10016-SF3 | PTX10016/JNP10016 switch fabric card supporting up to 14.4Tbps per line card |

# PTX10000 line ordering information (continued)

| Product number | Description |
|---|---|
| **PTX10000 Express line cards** | |
| PTX10K-LC1201-36CD | 36x400GbE/72x200GbE/144x100GbE/144x25GbE/144x10GbE QSFP-DD, 14.4Tbps line card [JNP10K-LC1201] |
| PTX10K-LC1202-36MR | 4x400GbE QSFP-DD and 32x100GbE QSFP-28, 4.8Tbps line card [JNP10K-LC1202] |
| PTX10K-LC1301-36DD | 36x800GbE/72x400GbE/288x100GbE QSFP-DD, 28.8Tbps line card [JNP10K-LC1301] |
| S-PTX10K-144C-A1-3 | SW, PTX10000 14.4Tbps RTU Adv1 License, 3-year term, with SW support |
| S-PTX10K-144C-A2-3 | SW, PTX10000 14.4Tbps RTU Adv2 License, 3-year term, with SW support |
| S-PTX10K-144C-P1-3 | SW, PTX10000 14.4Tbps RTU Prem1 License, 3-year term, with SW support |
| S-PTX10K-144C-P2-3 | SW, PTX10000 14.4Tbps RTU Prem2 License, 3-year term, with SW support |
| S-PTX10K-144C-A1-5 | SW, PTX10000 14.4Tbps RTU Adv1 License, 5-year term, with SW support |
| S-PTX10K-144C-A2-5 | SW, PTX10000 14.4Tbps RTU Adv2 License, 5-year term, with SW support |
| S-PTX10K-144C-P1-5 | SW, PTX10000 14.4Tbps RTU Prem1 License, 5-year term, with SW support |
| S-PTX10K-144C-P2-5 | SW, PTX10000 14.4Tbps RTU Prem2 License, 5-year term, with SW support |
| S-PTX10K-144C-A1-P | SW, PTX10K, 14.4Tbps, Adv1, without SW support, perpetual |
| S-PTX10K-144C-A2-P | SW, PTX10K, 14.4Tbps, Adv2, without SW support, perpetual |
| S-PTX10K-144C-P1-P | SW, PTX10K, 14.4Tbps, Prem1, without SW support, perpetual |
| S-PTX10K-144C-P2-P | SW, PTX10K, 14.4Tbps, Prem2, without SW support, perpetual |
| S-PTX10K-48C-A1-3 | SW, PTX10K, 4.8Tbps, Adv1, with SW support, 3 year |
| S-PTX10K-48C-A2-3 | SW, PTX10K, 4.8Tbps, Adv2, with SW support, 3 year |
| S-PTX10K-48C-P1-3 | SW, PTX10K, 4.8Tbps, Prem1, with SW support, 3 year |
| S-PTX10K-48C-P2-3 | SW, PTX10K, 4.8Tbps, Prem2, with SW support, 3 year |
| S-PTX10K-48C-A1-5 | SW, PTX10K, 4.8Tbps, Adv1, with SW support, 5 year |
| S-PTX10K-48C-A2-5 | SW, PTX10K, 4.8Tbps, Adv2, with SW support, 5 year |
| S-PTX10K-48C-P1-5 | SW, PTX10K, 4.8Tbps, Prem1, with SW support, 5 year |
| S-PTX10K-48C-P2-5 | SW, PTX10K, 4.8Tbps, Prem2, with SW support, 5 year |
| S-PTX10K-48C-A1-P | SW, PTX10K, 4.8Tbps, Adv1, without SW support, perpetual |
| S-PTX10K-48C-A2-P | SW, PTX10K, 4.8Tbps, Adv2, without SW support, perpetual |
| S-PTX10K-48C-P1-P | SW, PTX10K, 4.8Tbps, Prem1, without SW support, perpetual |
| S-PTX10K-48C-P2-P | SW, PTX10K, 4.8Tbps, Prem2, without SW support, perpetual |
| S-PTX10K-288C-A1-3 | SW, PTX10000 28.8Tbps RTU Adv1 License, 3-year term, with SW support |

# PTX10000 line ordering information (continued)

| Product number | Description |
|---|---|
| S-PTX10K-288C-A2-3 | SW, PTX10000 28.8Tbps RTU Adv2 License, 3-year term, with SW support |
| S-PTX10K-288C-P1-3 | SW, PTX10000 28.8Tbps RTU Prem1 License, 3-year term, with SW support |
| S-PTX10K-288C-P2-3 | SW, PTX10000 28.8Tbps RTU Prem2 License, 3-year term, with SW support |
| S-PTX10K-288C-P3-3 | SW, PTX10000 28.8Tbps RTU Prem3 License, 3-year term, with SW support |
| S-PTX10K-288C-A1-5 | SW, PTX10000 28.8Tbps RTU Adv1 License, 5-year term, with SW support |
| S-PTX10K-288C-A2-5 | SW, PTX10000 28.8Tbps RTU Adv2 License, 5-year term, with SW support |
| S-PTX10K-288C-P1-5 | SW, PTX10000 28.8Tbps RTU Prem1 License, 5-year term, with SW support |
| S-PTX10K-288C-P2-5 | SW, PTX10000 28.8Tbps RTU Prem2 License, 5-year term, with SW support |
| S-PTX10K-288C-P3-5 | SW, PTX10000 28.8Tbps RTU Prem3 License, 5-year term, with SW support |
| S-PTX10K-288C-A1-P | SW, PTX10K, 28.8Tbps, Adv1, without SW support, perpetual |
| S-PTX10K-288C-A2-P | SW, PTX10K, 28.8Tbps, Adv2, without SW support, perpetual |
| S-PTX10K-288C-P1-P | SW, PTX10K, 28.8Tbps, Prem1, without SW support, perpetual |
| S-PTX10K-288C-P2-P | SW, PTX10K, 28.8Tbps, Prem2, without SW support, perpetual |
| S-PTX10K-288C-P3-P | SW, PTX10K, 28.8Tbps, Prem3, without SW support, perpetual |
| **PTX10004 Fan trays and controllers** | |
| JNP10004-FAN2-BB | JNP10004 fan, Gen2, base bundle |
| JNP10004-FAN2 | JNP10004 fan, Gen2 |
| JNP10004-FAN3-BB | JNP10004 fan, Gen3, base bundle |
| JNP10004-FAN3 | JNP10004 fan, Gen3 |
| JNP10004-FTC2-BB | JNP10004 fan tray controller, Gen2, base bundle |
| JNP10004-FTC2 | JNP10004 fan tray controller, Gen2 |
| JNP10004-FTC3-BB | JNP10004 fan tray controller, Gen3, base bundle |
| JNP10004-FTC3 | JNP10004 fan tray controller, Gen3 |
| **PTX10008 Fan trays and controllers** | |
| JNP10008-FAN2-BB | JNP10008 fan, Gen2, base bundle |
| JNP10008-FAN2 | JNP10008 fan, Gen2 |
| JNP10008-FAN3-BB | JNP10008 fan, Gen3, base bundle |
| JNP10008-FAN3 | JNP10008 fan, Gen3 |
| JNP10008-FTC2-BB | JNP10008 fan tray controller, Gen2, base bundle |
| JNP10008-FTC2 | JNP10008 fan tray controller, Gen2 |

# PTX10000 line ordering information (continued)

| Product number | Description |
|---|---|
| JNP10008-FTC3-BB | JNP10008 fan tray controller, Gen3, base bundle |
| JNP10008-FTC3 | JNP10008 fan tray controller, Gen3 |
| **PTX10016 Fan trays and controllers** | |
| JNP10016-FAN2-BB | JNP10016 fan, Gen2, base bundle |
| JNP10016-FAN2 | JNP10016 fan, Gen2 |
| JNP10016-FTC2-BB | JNP10016 fan tray controller, Gen2, base bundle |
| JNP10016-FTC2 | JNP10016 fan tray controller, Gen2 |
| **PTX10000 Power modules** | |
| JNP10K-PWR-AC2-BB | JNP10000 5.5KW AC/HVDC power supply base bundle |
| JNP10K-PWR-AC2-R | JNP10000 5.5KW AC/HVDC power supply redundant |
| JNP10K-PWR-AC2 | JNP10000 5.5KW AC/HVDC power supply |
| JNP10K-PWR-AC3-BB | JNP10000 7.8KW Gen3 AC power supply base bundle |
| JNP10K-PWR-AC3-R | JNP10000 7.8KW Gen3 AC power supply redundant |
| JNP10K-PWR-AC3 | JNP10000 7.8KW Gen3 AC power supply |
| JNP10K-PWR-AC3H-BB | JNP10K 7.8KW Gen3 HVAC/HVDC PSU base bundle |
| JNP10K-PWR-AC3H-R | JNP10K 7.8KW Gen3 HVAC/HVDC PSU redundant |
| JNP10K-PWR-AC3H | JNP10K 7.8KW Gen3 HVAC/HVDC PSU |
| JNP10K-PWR-DC2-BB | JNP10000 5.5KW DC power supply base bundle |
| JNP10K-PWR-DC2-R | JNP10000 5.5KW DC power supply redundant |
| JNP10K-PWR-DC2 | JNP10000 5.5KW DC power supply |
| JNP10K-PWR-D3-BB | JNP10000 7.8KW Gen3 DC power supply base bundle |
| JNP10K-PWR-DC3-R | JNP10000 7.8KW Gen3 DC power supply redundant |
| JNP10K-PWR-DC3 | JNP10000 7.8KW Gen3 DC power supply |
| **PTX10000 Power cables** | |
| CBL-PWR2-L6-30P | Power cord, JNP10000 AC2 L6-30P |
| CBL-PWR2-L6-30P-RA | Power cord, JNP10000 AC2 RA L6-30P |
| CBL-PWR2-330P6W | Power cord, JNP10000 AC2 IEC309-330P6W |
| CBL-PWR2-330P6W-RA | Power cord, JNP10000 AC2 RA IEC309-330P6W |
| CBL-PWR2-332P6W | Power cord, JNP10000 AC2 IEC309-332P6W |
| CBL-PWR2-332P6W-RA | Power cord, JNP10000 AC2 RA IEC309-332P6W |

## PTX10000 line ordering information (continued)

| Product number | Description |
|---|---|
| **PTX10004 Front panels** | |
| JNP10004-FRPNL-BB | PTX10004/JNP10004 front panel, base bundle |
| JNP10004-FRNT-PNL | PTX10004/JNP10004 front panel |
| JNP10004-FRPNL1-BB | PTX10004/JNP10004 front panel with filter*, base bundle |
| JNP10004-FRPNL1 | PTX10004/JNP10004 front panel with filter* |
| JNP10004-FLTR | PTX10004/JNP10004 replaceable filter* |
| **PTX10008 Front panels** | |
| JNP10008-FRPNL-BB | PTX10008/JNP10008 front panel, base bundle |
| JNP10008-FRNT-PNL | PTX10008/JNP10008 front panel |
| JNP10008-FRPNL1-BB | PTX10008/JNP10008 front panel with filter*, base bundle |
| JNP10008-FRPNL1 | PTX10008/JNP10008 front panel with filter* |
| JNP10008-FLTR | PTX10008/JNP10008 replaceable filter* |
| **PTX10016 Front panels** | |
| JNP10016-FRPNL-BB | PTX10016/JNP10016 front panel, base bundle |
| JNP10016-FRNT-PNL | PTX10016/JNP10016 front panel |
| JNP10016-FRPNL1-BB | PTX10016/JNP10016 front panel with filter*, base bundle |
| JNP10016-FRPNL1 | PTX10016/JNP10016 front panel with filter* |
| JNP10016-FLTR | PTX10016/JNP10016 replaceable filter* |

*The front panel with air filter does not meet NEBS operating temperature range.

For additional power cables, Flex licensing/Pay-as-You-Grow (Pay-G) licensing, and other SKUs contact your local HPE sales representative.

## Ordering information

Virtual PTX is available for lab evaluations of PTX features and capabilities. To run Virtual PTX in a test environment, please contact your local HPE sales teams for more information.

# About HPE

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