

EX4000 LINE OF ETHERNET SWITCHES DATASHEET

Product Overview

The EX4000 line of Ethernet access switches offer a Cloud-Native, AI-Native economical solution for access layer deployments in branch and remote offices. Both 1 Gbps and 2.5 Gbps with 802.3at and 802.3bt options are available to provide higher-speed options and PoE options, especially when connecting to Wi-Fi 6E and Wi-Fi 7 access points.

As part of the underlying infrastructure for Juniper Mist Wired Assurance, the EX4000 is purpose-built for, and managed by, the cloud. The switches leverage Mist AI to simplify operations and provide better visibility into the experience of connected devices, delivering a simplified, experience-first approach to access layer switching.

Product Description

The Juniper Networks® EX4000 line of switches offers a Cloud-Native, AI-Native portfolio of access switches ideal for enterprise branch, remote office, and enterprise campus networks. EX4000 switches combine the simplicity of the cloud, the power of Mist AI™, and a robust high-performance hardware foundation to deliver a differentiated approach to access switching in the cloud, mobile, and IoT era. With Juniper® Mist™ Wired Assurance, you can effortlessly onboard, configure, and manage EX4000 switches from the cloud. This simplifies operations, improves visibility, and ensures a optimal experiences for connected devices.

Key features include:

- **Cloud-Native, AI-Native switches** featuring Juniper Mist Wired Assurance and Marvis Virtual Network Assistant
- **Fixed form factor** available in 12-port, 24-port, and 48-port configurations supporting both PoE and non-PoE, and offering 1G and MGig capabilities
- **Compact, fanless variants** available in 8-port and 12-port models
- **IEEE 802.3bz multigigabit ethernet** for enhanced data speeds
- **IEEE 802.3bt (PoE++)**, delivering up to 60 W of power per port
- **Fast and Perpetual PoE** to ensure uninterrupted power
- **6-member Virtual Chassis** support for simplified management and scalability

Offering a full suite of Layer 2 and Layer 3 capabilities, the EX4000 supports a wide range of deployment scenarios. As scaling requirements increase, you can rely on Juniper's Virtual Chassis technology to seamlessly connect and manage up to six EX4000 switches as a single device, delivering a scalable, pay-as-you-grow solution for expanding network environments.

The EX4000 line includes the following models:

EX4000-8P	Compact, fanless switch offering 8 x 1GbE, PoE+ (30W) access ports, 2 x 1GBaseT, and 2 x 1/10G SFP+ uplink ports with a total PoE budget of 120W
EX4000-12T	Compact, fanless switch offering 12 x 1GbE non-PoE access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ Virtual Chassis (VC) ports
EX4000-12P	Compact, fanless switch offering 12 x 1GbE, PoE+ (30W) access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports with a total PoE budget of 240W
EX4000-12MP	Compact, fanless switch offering 4 x 2.5 MGig access ports, 8 x 1GbE PoE++ (60W) access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports with a total PoE budget of 240W
EX4000-24T	Offers 24 x 1GbE non-PoE access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports
EX4000-24P	Offers 24 x 1GbE, PoE+ (30W) access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports with a total PoE budget of 370W
EX4000-24MP	Offers 4 x 2.5 MGig access ports, 20 x 1GbE, PoE++ (60W) access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports with a total PoE budget of 480W
EX4000-48T	Offers 48 x 1GbE, non-PoE access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports
EX4000-48P	Offers 48 x 1GbE, PoE+ (30W) access ports, 2 x 1/10G SFP+ uplink ports, and 2 x 10G SFP+ VC ports with a total PoE budget of 740WSFP+ uplink ports and 2 x 10G SFP+ VC ports with a total PoE budget of 740W.
EX4000-48MP	Offers 8 x 2.5 MGig, 40 x 1GbE, PoE++ (60W) access ports, 2 x 1/10G SFP+ uplink Ports and 2 x 10G SFP+ VC ports with a total PoE budget of 960W.

Each EX4000 -8 port, -12 port, -24 port, and 48-port model offers a fixed power supply and 2 x 1GbE/10GbE small form-factor pluggable plus transceiver (SFP+ transceiver) fixed uplink ports. Each EX4000 12-, 24-, and 48-port model also offers an additional 2 x 1GbE/10GbE SFP+ ports to support Virtual Chassis connections, which you can be reconfigure for use as network ports.

EX4000 Multigigabit models offer standards-based 802.3bt for delivering up to 60 watts on any access port. You can configure EX4000 switches to deliver fast PoE, enabling the switches to deliver to connected PoE devices within a few seconds of power being applied to the switches.

Architecture and Key Components

Cloud Management with Juniper Mist Wired Assurance Driven by Mist AI

You can quickly and easily onboard EX4000 switches (Day 0), provision them (Day 1), and manage (Day 2+) them from the cloud with Juniper Mist Wired Assurance, which brings AI-Native automation and insights that optimize experiences for end users and connected devices. The EX4000 provides rich Junos® operating system telemetry data for Mist AI, which helps achieve simpler operations, shorter mean time to repair (MTTR), and streamlined troubleshooting.

In addition to Juniper Mist Wired Assurance, Juniper's groundbreaking Marvis Virtual Network Assistant, simplifies network operations and streamlines troubleshooting via automatic fixes for Juniper Networks EX Series Switches or recommended actions for external systems.

Features and Benefits

Simplified operations with Juniper Mist Wired Assurance

- **Day 0 operations**—Onboard switches seamlessly by claiming a greenfield switch or adopting a brownfield switch with a single activation code for true plug-and-play simplicity.
- **Day 1 operations**—Implement a template-based configuration model for bulk rollouts of traditional and campus fabric deployments, while retaining the flexibility and control required to apply custom site- or switch-specific attributes. Automate provisioning of ports via dynamic port profiles.
- **Day 2 operations**—Leverage the AI in Juniper Mist Wired Assurance to meet service-level expectations, including throughput, successful connects, and switch health, with key pre-and post-connection metrics (see Figure 1).

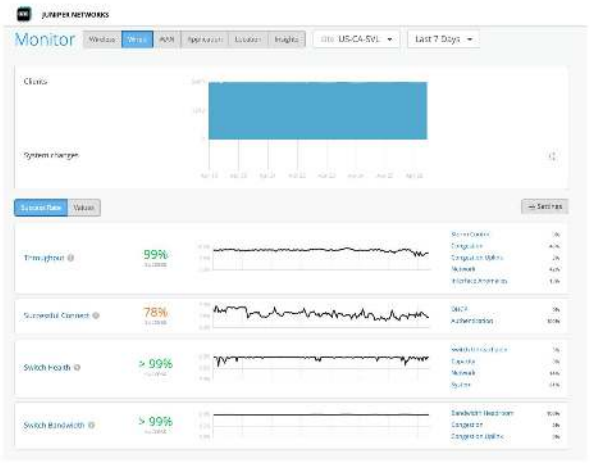


Figure 1: Juniper Mist Wired Assurance service-level expectations screen

Add the self-driving capabilities in Marvis Actions to detect loops, add missing VLANs, fix misconfigured ports, identify bad cables, isolate flapping ports, and discover persistently failing clients (see Figure 2). Perform software upgrades easily through Juniper Mist Cloud.

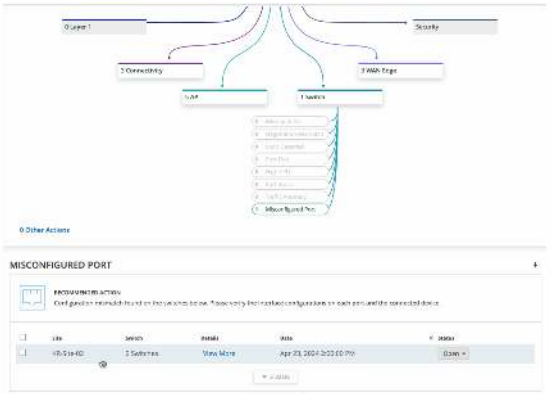


Figure 2: Marvis Actions for wired switches

For more information, see Juniper Mist Wired Assurance.

Virtual Chassis Technology

Juniper's Virtual Chassis technology allows multiple interconnected switches to operate as a single, logical unit, enabling users to manage all platforms as one virtual device. You can interconnect ip to six EX4000 switches as a Virtual Chassis using 2 x 10GbE SFP+ dedicated front-panel ports. Although configured as Virtual Chassis ports by default, you can also configure the 2 x 10GbE SFP+ ports as network ports. The EX4000 switches can form a Virtual Chassis with any other models within the EX4000 product line.

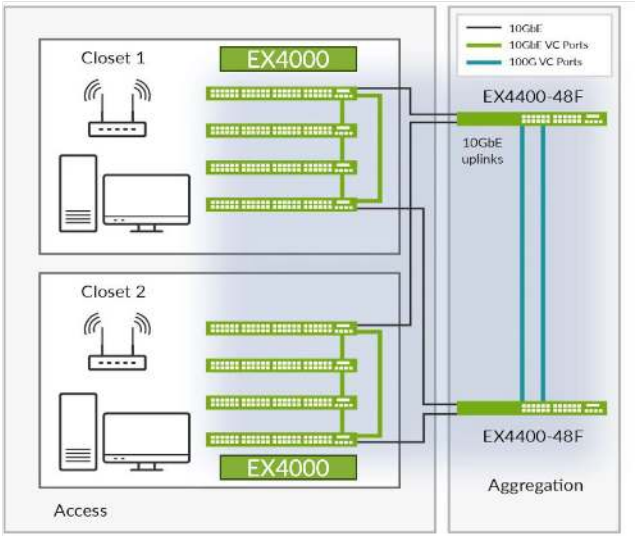


Figure 3: EX4000 Virtual Chassis config interconnected via dedicated front-panel 10GbE ports

Chassis-Class Availability

The EX4000 switches deliver high availability (HA) through graceful Routing Engine switchover (GRES), and nonstop bridging and routing when deployed in a Virtual Chassis configuration.

In a Virtual Chassis configuration, each EX4000 switch is capable of functioning as a Routing Engine (RE). When you connect two or more EX4000 switches, all Virtual Chassis member switches share a single control panel. Junos OS automatically initiates an election process to assign a primary (active) and backup (hot-standby) RE. An integrated L2 and L3 GRES feature maintains uninterrupted access to applications, services, and IP communications in the unlikely event of a primary RE failure.

When more than two switches are interconnected in a Virtual Chassis configuration, the remaining switch elements act as line cards and are available to assume the backup RE position should the designated primary RE fail. You can assign primary, backup, and line card priority status can to dictate the order of ascension; this N +1 RE redundancy, coupled with the GRES, nonstop active routing (NSR), and nonstop bridging (NSB) capabilities of Junos OS, assures a smooth transfer of control plane functions following unexpected failures.

The EX4000 implements the same slot/module/port numbering schema as other Juniper chassis-based products when numbering Virtual Chassis ports, providing true chassis-like operations. By using a consistent operating system and a single configuration file, all switches in a Virtual Chassis configuration are treated as a single device, greatly simplifying overall system maintenance and management.

Individually, the EX4000 offers a number of HA features typically associated with modular chassis-based switches. When combined with the field-proven Junos OS and L2/L3 failover capabilities, these features provide the EX4000 with true carrier-class reliability.

- **Nonstop bridging and nonstop active routing**: NSB and NSR on the EX4000 ensure that control plane protocols, states, and tables are synchronized between primary and standby REs to prevent protocol flaps or convergence issues following an RE failover.
- **Redundant trunk group (RTG)**: To avoid the complexities of STP without sacrificing network resiliency, the EX4000 employs redundant trunk groups to provide the necessary port redundancy and simplify switch configuration.
- **Cross-member link aggregation**: Cross-member link aggregation allows redundant link aggregation connections between devices in a single Virtual Chassis configuration, providing an additional level of reliability and availability.
- **IPv4 and IPv6 routing support**: IPv4 and IPv6 Layer 3 routing (OSPF and BGP) is available with a Flex license, enabling highly resilient network.

PoE/PoE+/PoE++ Power, Perpetual and Fast PoE

The EX4000 delivers PoE to support connected devices, includingphones, surveillance cameras, IoT devices, and 802.11AX/Wi-Fi 6/Wi-Fi 7 access points. It offers a PoE power budget of up to 960W on the EX4000-48MP model, with up to 60W per port based on the IEEE 802.3bt PoE standard.

EX4000 switches support perpetual PoE, which provides uninterrupted power to connected PoE powered devices (PDs) even when the power sourcing equipment switch (PSE) is rebooting. EX4000 switches also support a Fast PoE capability that delivers PoE power to connected endpoints during a switch power-up, even before the switch is fully operational. This is especially beneficial in situations where the endpoint only needs the power and is not necessarily dependent on network connectivity.

Junos Telemetry Interface

The EX4000 supports Junos telemetry interface (JTI), a modern telemetry streaming feature designed for switch health and performance monitoring. You can stream sensor data to a management system at configurable periodic intervals, enabling network administrators to monitor individual link and node utilization as well as troubleshoot issues such as network congestion in real time. JTI delivers the following features:

- Performance management by provisioning sensors to collect and stream data and analyze application and workload flow paths through the network.

- Capacity planning and optimization by proactively detecting hotspots and monitoring latency and microbursts.
- Troubleshooting and root cause analysis via high-frequency monitoring and correlation of overlay and underlay networks.

Junos Operating System

EX4000 switches run Junos OS, Juniper's powerful and robust network operating system that powers all Juniper switches, routers, and firewalls. By utilizing a common operating system, Juniper delivers a consistent implementation and operation of control plane features across all products. To maintain that consistency, Junos OS adheres to a highly disciplined development process that uses a single source code and employs a highly available modular architecture to prevent isolated failures from bringing down an entire system. These attributes are fundamental to the core value of the software, enabling all Junos OS-powered products to be updated simultaneously with the same software release. All features are fully regression tested, making each new release a true superset of the previous version.

You can deploy the software with complete confidence that all existing capabilities are maintained and operate in the same way.

Flex Licensing

Juniper Flex licensing offers a common, simple, and flexible licensing model for EX Series access switches, enabling you to purchase features based on your unique network and business needs.

We offer Flex licensing in Standard, Advanced, and Premium tiers. Standard tier features are available with the Junos OS image that ships with EX Series switches. You can unlock additional features with the purchase of a Flex Advanced or Flex Premium license.

The Flex Advanced and Flex Premium licenses for EX Series platforms are class-based, determined by the number of access ports on the switch. Class 1 (C1) switches have 12 ports, Class 2 (C2) switches have 24 ports, and Class 3 (C3) switches have 32 or 48 ports.

EX4000 switches support both subscription and perpetual Flex licenses. We offer subscription licenses for three- and five-year terms. In addition to Junos OS features, the Flex Advanced and Flex Premium subscription licenses include Juniper Mist Wired Assurance. Flex Advanced and Flex Premium subscription licenses also allow portability across the same tier and class of switches, ensuring investment protection.

For a complete list of features supported by the Flex Standard, Advanced, and Premium tiers, or to learn about Junos OS EX Series licenses, please visit: https://www.juniper.net/documentation/us/en/software/license/juniper-licensing-user-guide/topics/concept/licenses-for-ex.html.

Enhanced Limited Lifetime Warranty

The EX4000 includes an enhanced limited lifetime hardware warranty that provides return-to-factory switch replacement for as long as the original purchaser owns the product. The warranty includes lifetime software updates, advanced shipping of spares within one business day, and 24x7 Juniper Networks Technical Assistance Center (JTAC) support for 90 days after the purchase date. Power supplies and fan trays are covered for a period of five years. For complete details, please visit https://support.juniper.net/support/pdf/warranty/enhanced-limited-lifetime-warranty-ex-series.pdf

Product Options

Available EX4000 models are listed in Table 1

Table 1. EX4000 Line of Ethernet Switches

Model/Product SKU	Access Port Configuration	PoE/PoE+ Ports	POE++ (60W)	PoE Power Budget	10GbE Ports (Uplinks)	10GbE Ports (Stacking/ Uplinks)	Cooling
EX4000-8P	10-port 10/100/1000BASE-T	8	12	120 W	2	0	Fanless
EX4000-12T	12-port 10/100/1000BASE-T	N/A	N/A	N/A	2	2	Fanless
EX4000-12P	12-port 10/100/1000BASE-T	12	0	240 W	2	2	Fanless
EX4000-12MP	4x 100 MB/1GbE/2.5GbE + 8x 10 MB/100 MB/1GbE	12	12	240 W	2	2	Fanless
EX4000-24T	24-port 10/100/1000BASE-T	N/A	N/A	N/A	2	2	AFO (front-to-back airflow)
EX4000-24P	24-port 10/100/1000BASE-T	24	0	370 W	2	2	AFO (front-to-back airflow)

Model/Product SKU	Access Port Configuration	PoE/PoE+ Ports	POE++ (60W)	PoE Power Budget	10GbE Ports (Uplinks)	10GbE Ports (Stacking/ Uplinks)	Cooling
EX4000-24MP	4x 100 MB/1GbE/2.5GbE + 20x 10 MB/100 MB/1GbE	24	24	480 W	2	2	AFO (front-to-back airflow)
EX4000-48T	48-port 10/100/1000BASE-T	N/A	N/A	N/A	2	2	AFO (front-to-back airflow)
EX4000-48P	48-port 10/100/1000BASE-T	48	0	740 W	2	2	AFO (front-to-back airflow)
EX4000-48MP	8x 100 MB/1GbE/2.5GbE + 40x 10 MB/100 MB/1GbE	48	48	960 W	2	2	AFO (front-to-back airflow)

Table 2. EX4000 Switch Power Options

Model Number	Max System Power Consumption (Input Power without PoE)	Total PoE Power Budget
EX4000-8P	30W	120W
EX4000-12T	34 W	0
EX4000-12P	34 W	240 W
EX4000-12MP	40 W	240 W
EX4000-24T	43 W	0
EX4000-24P	51 W	370 W
EX4000-24MP	57 W	480 W
EX4000-48T	63 W	0
EX4000-48P	71 W	740 W
EX4000-48MP	92 W	960 W

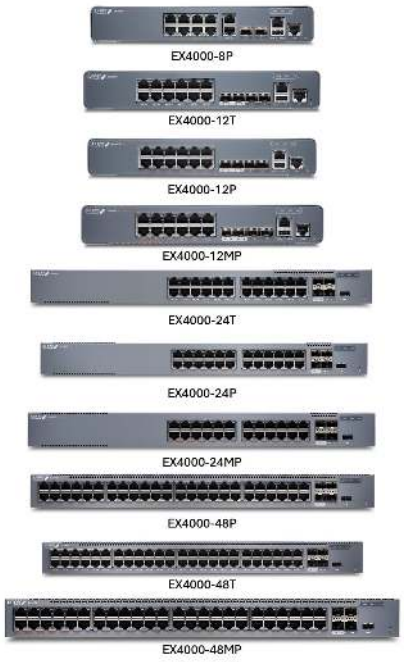


Figure 4: EX4000 line of Switches

EX4000 Specifications

Physical Specifications

Dimensions (W x H x D)

- EX4000-8P and EX4000-12T: 10.39 x 1.71 x 9.57 in (26.4 x 4.34 x 24.3 cm)
- EX4000-8P and EX4000-12T: 10.39 x 1.71 x 9.57 in (26.4 x 4.34 x 24.3 cm)
- EX4000-12P and EX4000-12MP: 10.39 x 1.71 x 9.99 in (26.4 x 4.34 x 25.37 cm) w / PSU Fins
- EX4000-24T: 17.36 x 1.71 x 8.42 in (44.10 x 4.34 x 21.40 cm)
- EX4000-24P and EX4000-24MP: 17.36 x 1.71 x 10.16 in (44.10 x 4.34 x 25.80 cm)
- EX4000-48T: 17.36 x 1.71 x 10.16 in (44.10 x 4.34 x 25.80 cm)
- EX4000-48P and EX4000-48MP: 17.36 x 1.71 x 11.97 in (44.10 x 4.34 x 30.40 cm)

System Weight

- EX4000-8P: 2.55 Kg
- EX4000-12T: 2.30 Kg
- EX4000-12P: 3.12 Kg
- EX4000-12MP: 3.15 Kg
- EX4000-24T: 2.89 Kg
- EX4000-24P: 4.00 Kg
- EX4000-24MP: 4.08 Kg
- EX4000-48T: 3.56 Kg
- EX4000-48P: 4.84 Kg
- EX4000-48MP: 5.2 Kg

Environmental Ranges

- Operating temperature at sea level:
  - 8 Port EX4000 SKUs
    - 23° to 122° F (0° to 50°C)[1],
  - 12 Port EX4000 SKUs:
    - 32° to 113° F (0° to 45°C)[1],
  - 12 Port EX4000 Non PoE SKUs:
    - 23° to 113° F (0° to 50°C)[1],
  - 24 Port and -48 Port EX4000 SKUs:
    - 23° to 122° F (0° to 50°C)
- Storage temperature: -40° to 158° F (-40° to 70° C)

- Operating altitude: Up to 1000 ft (3,048 m), derate -1° C for every 1000ft from max supported ambient
- Nonoperating altitude: Up to 15,000 ft (4,572 m)
- Relative humidity operating: 5% to 90% (noncondensing)
- Relative humidity non-operating: 5% to 95% (noncondensing)

[1] To support fanless SKUs operating beyond 40°C, use industrial grade optics(85°C).

Cooling

- Airflow (CFM):
  - EX4000-8P: NA
  - EX4000-12T: NA
  - EX4000-12P: NA
  - EX4000-12MP: NA
  - EX4000-24T: 9
  - EX4000-24PT: 16
  - EX4000-24MP: 17
  - EX4000-48T: 10
  - EX4000-48P: 28
  - EX4000-48MP: 29

Hardware Specifications

Switching Engine Mode

- Store and forward

Memory

- DRAM: 4 GB with Error Correcting Code (ECC) on all models
- Storage: 8 GB on all models

GbE Port Density per System

- EX4000-8P: 12 (10 host ports + 2 port 10GbE SFP+ Uplinks)
- EX4000-12T/12P: 16 (12 host ports + 2 port SFP+ Uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)
- EX4000-12MP: 16 (12 host ports + 2 port SFP+ Uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)
- EX4000-24T/24P: 28 (24 host ports + 2 port SFP+ Uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)
- EX4000-24MP: 28 (24 host ports + 2 port SFP+ Uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)
- EX4000-48T/48P: 52 (48 host ports + 2 port SFP+ Uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)
- EX4000-48MP: 48 (48 host ports + 2 port SFP/SFP+ uplinks + 2 port 10GbE SFP+ Virtual Chassis/uplinks)

Physical Layer

- Time domain reflectometry (TDR) for detecting cable breaks and shorts
- Auto medium-dependent interface/medium-dependent interface crossover (MDI/MDIX) support
- Port speed downshift/setting maximum advertised speed on 10/100/1000BASE-T ports
- Digital optical monitoring for optical ports

Packet Switching Capacities (Maximum with 64 Byte Packets)

- Non-blocking EX4000-8P: 30 Gbps (unidirectional)/60 Gbps (bidirectional)
- Non-blocking EX4000-12P/12T: 52 Gbps (unidirectional)/104 Gbps (bidirectional)
- Non-blocking EX4000-12MP: 58 Gbps (unidirectional)/116 Gbps (bidirectional)
- Non-blocking EX4000-24P/24T: 64 Gbps (unidirectional)/128 Gbps (bidirectional)
- Non-blocking EX4000-24MP: 70 Gbps (unidirectional)/140 Gbps (bidirectional)
- Non-blocking EX4000-48P/48T: 88 Gbps (unidirectional)/176 Gbps (bidirectional)
- Non-blocking EX4000-48MP: 100 Gbps (unidirectional) /200 Gbps (bidirectional)

Software Specifications [Under Test]

Layer 2/Layer 3 Throughput (Mpps) (Maximum with 64 Byte Packets)

- EX4000-8P - 44Mpps
- EX4000-12P/T - 77Mpps
- EX4000-12MP - 86Mpps
- EX4000-24P/T - 95Mpps
- EX4000-24MP - 104Mbps
- EX4000-48P/T - 130Mpps
- EX4000-48MP - 148Mpps

Security

- Media Access Control (MAC) limiting (per port and per VLAN)
- Allowed MAC addresses: 32,000
- Dynamic Address Resolution Protocol (ARP) dynamic ARP inspection (DAI)
- IP source guard
- Local proxy ARP
- Static ARP support
- Dynamic Host Configuration Protocol (DHCP) snooping
- Captive portal

- Persistent MAC address configurations
- Distributed denial of service (DDoS) protection (CPU control path flooding protection)

Layer 2 Switching

- Maximum MAC addresses per system: 32,000
- Jumbo frames: 9216 bytes
- Concurrent Active VLAN: 1020
- Range of possible VLAN IDs: 1 to 4094
- Virtual Spanning Tree (VST) instances: 253
- Port-based VLAN
- Voice VLAN
- Physical port redundancy: Redundant trunk group (RTG)
- Compatible with Per-VLAN Spanning Tree Plus (PVST+)
- Routed VLAN interface (RVI)
- Uplink failure detection (UFD)
- ITU-T G.8032: Ethernet Ring Protection Switching
- IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)
- LLDP-MED with VoIP integration
- Default VLAN and multiple VLAN range support
- MAC learning deactivate
- Persistent MAC learning (sticky MAC)
- MAC notification
- Private VLANs (PVLANs)
- Explicit congestion notification (ECN)
- Layer 2 protocol tunneling (L2PT)
- IEEE 802.1ak: Multiple VLAN Registration Protocol (MVRP)
- IEEE 802.1p: Class of Service (CoS) prioritization
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1X: Port Access Control
- IEEE 802.1ak: Multiple Registration Protocol
- IEEE 802.3: 10BASE-T
- IEEE 802.3u: 100BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3ae: 10-Gigabit Ethernet
- IEEE 802.3by: 25-Gigabit Ethernet
- IEEE 802.3af: Power over Ethernet
- IEEE 802.3at: Power over Ethernet Plus
- IEEE 802.3x: Pause Frames/Flow Control
- IEEE 802.3ah: Ethernet in the First Mile

Spanning Tree

- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)
- Number of MSTP instances supported: 64
- Number of VLAN Spanning Tree Protocol (VSTP) instances supported: 253
- IEEE 802.1w: Rapid reconfiguration of Spanning Tree Protocol

Link Aggregation

- IEEE 802.3ad: Link Aggregation Control Protocol
- 802.3ad (LACP) support:
  - Number of LAGs supported: 128
  - Maximum number of ports per LAG: 8
- LAG load-sharing algorithm bridged or routed (unicast or multicast) traffic:
  - IP: S/D IP
  - TCP/UDP: S/D IP, S/D Port
  - Non-IP: S/D MAC
  - Tagged ports support in LAG

Layer 3 Features: IPv4

- Maximum number of ARP entries: 4,000
- Maximum number of IPv4 unicast routes in hardware: 1,000 prefixes; 7,800 host routes
- Maximum number of IPv4 multicast routes in hardware: 3,200 multicast routes
- Routing protocols: RIPv1/v2, OSPF, BGP, IS-IS
- Static routing
- Routing policy
- Bidirectional Forwarding Detection (BFD)
- L3 redundancy: Virtual Router Redundancy Protocol (VRRP)
- VRF-Lite

Layer 3 Features: IPv6

- Maximum number of neighbor discovery (ND) entries: 3,000
- Maximum number of IPv6 unicast routes in hardware: 1,000 prefixes; 3,800 host routes
- Maximum number of IPv6 multicast routes in hardware: 1,650 multicast routes
- Routing protocols: RIPng, OSPFv3, IPv6, IS-IS
- Static routing

Access Control Lists (ACLs) (Junos OS Firewall Filters)

- ACL entries (ACE) in hardware per system:
  - Port-based ACL (PACL) ingress: 510
  - VLAN-based ACL (VACL) ingress: 510
  - Router-based ACL (RACL) ingress: 510
  - Port-based ACL (PACL) egress: 510

  - VLAN-based ACL (VACL) egress: 255
  - Egress across RACL: 510
  - ACL counter for denied packets
- ACL counter for permitted packets
- Ability to add/remove/change ACL entries in middle of list (ACL editing)
- L2-L4 ACL

Access Security

- 802.1X port-based
- 802.1X multiple supplicants
- 802.1X with VLAN assignment
- 802.1X with authentication bypass access (based on host MAC address)
- 802.1X with VoIP VLAN support
- 802.1X dynamic ACL based on RADIUS attributes
- 802.1X Supported Extensible Authentication Protocol (EAP) types: Message Digest 5 (MD5), Transport Layer Security (TLS), Tunneled TLS (TTLS), Protected Extensible Authenticated Protocol (PEAP)
- MAC authentication (RADIUS)
- Control plane DoS protection
- Radius functionality over IPv6 for authentication, authorization, and accounting (AAA)
- DHCPv6 snooping
- IPv6 neighbor discovery
- IPv6 source guard
- IPv6 router advertisement (RA) guard
- IPv6 Neighbor Discovery Inspection

High Availability

- GRES for Layer 2 hitless forwarding and Layer 3 protocols on RE failover
- Graceful protocol restart (OSPF, BGP)
- Layer 2 hitless forwarding on RE failover
- Nonstop bridging: LACP, xSTP
- Nonstop routing: PIM, OSPF v2 and v3, RIP v2, RIPng, BGP, BGPv6, IS-IS, IGMP v1, v2, v3

Quality of Service

- L2 QoS
- L3 QoS
- Ingress policing: 1 rate 2 color
- Hardware queues per port: 12 (8 unicast + 4 multicast)
- Scheduling methods (egress): Strict priority (SP), weighted deficit round-robin (WDRR)
- 802.1p, DiffServ code point (DSCP)/IP precedence trust and marking
- L2-L4 classification criteria: Interface, MAC address, Ethertype, 802.1p, VLAN, IP address, DSCP/IP precedence, TCP/UDP port numbers, and more
- Congestion avoidance capabilities: Tail drop, weighted random early detection (WRED)

Multicast

- IGMP: v1, v2, v3
- IGMP snooping
- Multicast Listener Discovery (MLD) snooping
- Protocol Independent Multicast-Sparse Mode (PIM-SM), PIM Source-Specific Mode (PIM-SSM), PIM Dense Mode (PIM-DM)

Management and Analytics Platforms

- Juniper Mist Wired Assurance for campus

Device Management and Operations

- Junos OS CLI
- Out-of-band management: Serial; 10/100/1000BASE-T Ethernet
- Rescue configuration
- Configuration rollback
- Image rollback
- RMON (RFC2819) groups 1, 2, 3, 9
- Remote performance monitoring
- SNMP: v1, v2c, v3
- Network Time Protocol (NTP)
- DHCP server
- DHCP client and DHCP proxy
- DHCP relay and helper
- DHCP local server support
- RADIUS
- TACACS+
- SSHv2
- Secure copy
- HTTP/HTTPs
- Domain Name System (DNS) resolver
- System logging
- Temperature sensor
- Configuration backup via FTP/secure copy

Supported RFCs

- RFC 768 UDP

- RFC 783 TFTP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 Telnet client and server
- RFC 894 IP over Ethernet
- RFC 903 RARP
- RFC 906 TFTP Bootstrap
- RFC 951, 1542 BootP
- RFC 1027 Proxy ARP
- RFC 1058 RIP v1
- RFC 1112 IGMP v1
- RFC 1122 Host Requirements
- RFC 1195 Use of OSI IS-IS for Routing in TCP/IP and Dual Environments (TCP/IP transport only)
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1492 TACACS+RFC 1519 CIDR
- RFC 1587 OSPF NSSA Option
- RFC 1591 DNS
- RFC 1812 Requirements for IPv4 Routers
- RFC 1981 Path MTU Discovery for IPv6
- RFC 2030 SNTP, Simple Network Time Protocol
- RFC 2068 HTTP server
- RFC 2080 RIPng for IPv6
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 2154 OSPF w/Digital Signatures (password, MD-5)
- RFC 2236 IGMP v2
- RFC 2267 Network Ingress Filtering
- RFC 2328 OSPF v2 (edge-mode)
- RFC 2338 VRRP
- RFC 2362 PIM-SM (edge-mode)
- RFC 2370 OSPF Opaque LSA Option
- RFC 2453 RIP v2
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification
- RFC 2461 Neighbor Discovery for IP Version 6 (IPv6)
- RFC 2463 Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
- RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
- RFC 2474 DiffServ Precedence, including 12 queues/port
- RFC 2475 DiffServ Core and Edge Router Functions
- RFC 2526 Reserved IPv6 Subnet Anycast Addresses
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2740 OSPF for IPv6
- RFC 2925 MIB for Remote Ping, Trace
- RFC 3176 sFlow
- RFC 3376 IGMP v3
- RFC 3484 Default Address Selection for Internet Protocol Version 6 (IPv6)
- RFC 3513 Internet Protocol Version 6 (IPv6) Addressing Architecture
- RFC 3569 draft-ietf-ssm-arch-06.txt PIM-SSM PIM Source Specific Multicast
- RFC 3579 RADIUS EAP support for 802.1x
- RFC 6614 RadSec
- RFC 3618 Multicast Source Discovery Protocol (MSDP)
- RFC 3623 OSPF Graceful Restart
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4291 IPv6 Addressing Architecture
- RFC 4443 ICMPv6 for the IPv6 Specification
- RFC 4541 IBMP and MLD snooping services
- RFC 4552 OSPFv3 Authentication
- RFC 4861 Neighbor Discovery for IPv6
- RFC 4862 IPv6 Stateless Address Autoconfiguration
- RFC 4915 MT-OSPF
- RFC 5095 Deprecation of Type 0 Routing Headers
- RFC 5176 Dynamic Authorization Extensions to RADIUS
- RFC 5798 VRRPv3 for IPv6
- Draft-ietf-bfd-base-05.txt Bidirectional Forwarding Detection
- Draft-ietf-idr-restart-10.txt Graceful Restart Mechanism
- Draft-ietf-isis-restart-02 Restart Signaling for IS-IS
- Draft-ietf-isis-wg-multi-topology-11 Multi Topology (MT) Routing in IS-IS for BGP
- Internet draft-ietf-isis-ipv6-06.txt, Routing IPv6 with IS-IS
- LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA-1057, draft 08
- PIM-DM Draft IETF PIM Dense Mode draft-ietf-idmr-pimdm-05.txt, draft-ietf-pim-dm-new-v2-04.txt

Supported MIBs

- RFC 1155 SMI
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB and TRAPs
- RFC 1493 Bridge MIB
- RFC 1643 Ethernet MIB
- RFC 1657 BGP-4 MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 1905 RFC 1907 SNMP v2c, SMIv2 and Revised MIB-II
- RFC 2011 SNMPv2 for Internet Protocol using SMIv2

- RFC 2012 SNMPv2 for transmission control protocol using SMIv2
- RFC 2013 SNMPv2 for user datagram protocol suing SMIv2
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2287 System Application Packages MIB
- RFC 2570–2575 SNMPv3, user based security, encryption, and authentication
- RFC 2576 Coexistence between SNMP Version 1, Version 2, and Version 3
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP Textual Conventions for SMIv2
- RFC 2665 Ethernet-like interface MIB
- RFC 2787 VRRP MIB
- RFC 2819 RMON MIB
- RFC 2863 Interface Group MIB
- RFC 2863 Interface MIB
- RFC 2922 LLDP MIB
- RFC 2925 Ping/Traceroute MIB
- RFC 2932 IPv4 Multicast MIB
- RFC 3413 SNMP Application MIB
- RFC 3414 User-based Security model for SNMPv3
- RFC 3415 View-based Access Control Model for SNMP
- RFC 3621 PoE-MIB (PoE switches only)
- RFC 4188 STP and Extensions MIB
- RFC 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and VLAN extensions
- RFC 5643 OSPF v3 MIB support
- Draft – blumenthal – aes – usm - 08
- Draft – reeder - snmpv3 – usm - 3desede -00
- Draft-ietf-bfd-mib-02.txt
- Draft-ietf-idmr-igmp-mib-13
- Draft-ietf-idmr-pim-mib-09
- Draft-ietf-idr-bgp4-mibv2-02.txt – Enhanced BGP-4 MIB
- Draft-ietf-isis-wg-mib-07

Troubleshooting

- Debugging: CLI via console, Telnet, or SSH
- Diagnostics: Show and debug command, statistics
- Traffic mirroring (port)
- Traffic mirroring (VLAN)
- IP tools: Extended ping and trace
- Juniper Networks commit and rollback

Traffic Monitoring

- ACL-based mirroring
- Mirroring destination ports per system: 4
  - LAG port monitoring
  - Multiple destination ports monitored to 1 mirror (N:1)
- Maximum number of mirroring sessions: 4
- Mirroring to remote destination (over L2): 1 destination VLAN

Safety and Compliance

Electromagnetic Compatibility (EMC) Requirements

- 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 61000-3-2
- IEC/EN 61000-3-3
- AS/NZS CISPR 32
- VCCI-CISPR 32
- BSMI CNS 15936
- KS C 9835
- KS C 9832
- KS C 9610

Safety Requirements Chassis and Optics

- 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

Energy Efficiency

- AT&T TEER (ATIS-06000015.03.2013)
- ECR 3.0.1
- ETSI ES 203 136 V.1.1.1
- Verizon TEEER (VZ.TPR.9205)

Environmental

- Reduction of Hazardous Substances (ROHS) 6/6

Telco

- CLEI code

Noise Specifications

- Max Noise measurements based on operational tests taken from bystander position (average) and performed at 23° C +/- 2° C in compliance with ISO 7779.

Table 3: Acoustic in dBA [Under Test]

Model Number	Acoustics Noise (dBA)
EX4000-8P	NA
EX4000-12T	NA
EX4000-12P	NA
EX4000-12MP	NA
EX4000-24T	23.1
EX4000-24P	24.4
EX4000-24MP	26.9
EX4000-48T	24.2
EX4000-48P	27.1
EX4000-48MP	27.5

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 https://www.juniper.net/us/en/products.html.

Ordering Information

SKUs	Description
EX4000-8P	EX4000 8-Port 10/100/1000BaseT PoE+, 2x 1GBaseT, 2x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-12T	EX4000 12-Port 10/100/1000BaseT, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-12P	EX4000 12-Port 10/100/1000BaseT PoE+, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-12MP	EX4000 12-Port Multi-Gig switch with 4x 100M/1G/2.5GBaseT, 8x 10/100/1000BaseT, PoE++(60W), 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-24T	EX4000 24-Port 10/100/1000BaseT, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-24P	EX4000 24-Port 10/100/1000BaseT PoE+, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-24MP	EX4000 24-Port Multi-Gig with 4x 100M/1G/2.5GBaseT, 20x 10/100/1000BaseT, PoE++, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-48T	EX4000 48-Port 10/100/1000BaseT, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-48P	EX4000 48-Port 10/100/1000BaseT PoE+, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
EX4000-48MP	EX4000 48-Port Multi-Gig switch with 8x 100M/1G/2.5GBaseT, 40x 10/100/1000BaseT, PoE++, 4x 1G/10G SFP/SFP+ (optics sold separately) with Standard SW
Perpetual Licenses	
S-EX-A-C1-P	Software, EX Series Advanced license, Class 1 (8 ports or 12 ports), Perpetual license for EX4000 8-port, or 12-port switches
S-EX-P-C1-P	Software, EX Series Premium license, Class 1 (8 ports or 12 ports), Perpetual license for EX4000 8-port, or 12-port switches
S-EX-A-C2-P	Software, EX Series Advanced license, Class 2 (24 ports), Perpetual license for EX4000 24-port switches
S-EX-P-C2-P	Software, EX Series Premium license, Class 2 (24 ports), Perpetual license for EX4000 24-port switches
S-EX-A-C3-P	Software, EX Series Advanced license, Class 3 (32 or 48 ports), Perpetual license for EX4000 48-port switches
S-EX-P-C3-P	Software, EX Series Premium license, Class 3 (32 or 48 ports), Perpetual license for EX4000 48-port switches
Subscription Licenses	
S-EX-A-C1-1	Software, EX Series Advanced license, Class 1 (8 ports or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port or 12-port switches, 1 year
S-EX-A-C1-3	Software, EX Series Advanced license, Class 1 (8 ports or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 3 year
S-EX-A-C1-5	Software, EX Series Advanced license, Class 1 (8 ports or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 5 year
S-EX-A-C1-7	Software, EX Series Advanced license, Class 1 (8 ports or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8 port or 12-port switches, 7 year
S-EX-A-C2-1	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 1 year
S-EX-A-C2-3	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 3 year
S-EX-A-C2-5	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 5 year
S-EX-A-C2-7	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 7 year
S-EX-A-C3-1	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 1 year
S-EX-A-C3-3	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 3 year
S-EX-A-C3-5	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 5 year
S-EX-A-C3-7	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 7 year
S-EX-P-C1-1	Software, EX Series Premium license, Class 1 (8 or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 1 year
S-EX-P-C1-3	Software, EX Series Premium license, Class 1 (8 or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 3 year
S-EX-P-C1-5	Software, EX Series Premium license, Class 1 (8 or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 5 year

SKUs	Description
S-EX-P-C1-7	Software, EX Series Premium license, Class 1 (8 or 12 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches, 7 year
S-EX-P-C2-1	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 1 year
S-EX-P-C2-3	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 3 year
S-EX-P-C2-5	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 5 year
S-EX-P-C2-7	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches, 7 year
S-EX-P-C3-1	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 1 year
S-EX-P-C3-3	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 3 year
S-EX-P-C3-5	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 5 year
S-EX-P-C3-7	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches, 7 year
S-EX-A-C1-1-COR	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 1 year
S-EX-A-C1-3-COR	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 3 year
S-EX-A-C1-5-COR	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 5 year
S-EX-A-C1-7-COR	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 7 year
S-EX-A-C2-1-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 1 year
S-EX-A-C2-3-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 3 year
S-EX-A-C2-5-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 5 year
S-EX-A-C2-7-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 7 year
S-EX-A-C3-1-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 1 year
S-EX-A-C3-3-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 3 year
S-EX-A-C3-5-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 5 year
S-EX-A-C3-7-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 7 year
S-EX-P-C1-1-COR	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 1 year

SKUs	Description
S-EX-P-C1-3-COR	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 3 year
S-EX-P-C1-5-COR	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 5 year
S-EX-P-C1-7-COR	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC CORE support, 7 year
S-EX-P-C2-1-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 1 year
S-EX-P-C2-3-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 3 year
S-EX-P-C2-5-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 5 year
S-EX-P-C2-7-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 7 year
S-EX-P-C3-1-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 1 year
S-EX-P-C3-3-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 3 year
S-EX-P-C3-5-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 5 year
S-EX-P-C3-7-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 7 year
S-EX-A-C1-1-ND	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 1 year
S-EX-A-C1-3-ND	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 3 year
S-EX-A-C1-5-ND	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 5 year
S-EX-A-C1-7-ND	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 7 year
S-EX-A-C2-1-ND	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 1 year
S-EX-A-C2-3-ND	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 3 year
S-EX-A-C2-5-ND	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 5 year
S-EX-A-C2-7-ND	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 7 year
S-EX-A-C3-1-ND	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 1 year
S-EX-A-C3-3-ND	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 3 year
S-EX-A-C3-5-ND	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 5 year

SKUs	Description
S-EX-A-C3-7-ND	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 7 year
S-EX-P-C2-7-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC CORE support, 7 year
S-EX-A-C3-1-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 1 year
S-EX-A-C3-3-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 3 year
S-EX-A-C3-5-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 5 year
S-EX-A-C3-7-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC CORE support, 7 year
S-EX-P-C1-1-ND	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 1 year
S-EX-P-C1-3-ND	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 3 year
S-EX-P-C1-5-ND	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 5 year
S-EX-P-C1-7-ND	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC NEXT DAY support, 7 year
S-EX-P-C2-1-ND	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 1 year
S-EX-P-C2-3-ND	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 3 year
S-EX-P-C2-5-ND	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 5 year
S-EX-P-C2-7-ND	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC NEXT DAY support, 7 year
S-EX-P-C3-1-ND	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 1 year
S-EX-P-C3-3-ND	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 3 year
S-EX-P-C3-5-ND	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 5 year
S-EX-P-C3-7-ND	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC NEXT DAY support, 7 year
S-EX-A-C1-1-SD	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 1 year
S-EX-A-C1-3-SD	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 3 year
S-EX-A-C1-5-SD	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 5 year
S-EX-A-C1-7-SD	Software, EX Series Advanced license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 7 year

SKUs	Description
S-EX-A-C2-1-SD	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 1 year
S-EX-A-C2-3-SD	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 3 year
S-EX-A-C2-5-SD	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 5 year
S-EX-A-C2-7-SD	Software, EX Series Advanced license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 7 year
S-EX-A-C3-1-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 1 year
S-EX-A-C3-3-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 3 year
S-EX-A-C3-5-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 5 year
S-EX-A-C3-7-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 7 year
S-EX-P-C1-1-SD	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 12-port switches with SVC SAME DAY support, 1 year
S-EX-P-C1-3-SD	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 3 year
S-EX-P-C1-5-SD	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 5 year
S-EX-P-C1-7-SD	Software, EX Series Premium license, Class 1 (8 ports or 12), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 8-port, or 12-port switches with SVC SAME DAY support, 7 year
S-EX-P-C2-1-SD	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 1 year
S-EX-P-C2-3-SD	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 3 year
S-EX-P-C2-5-SD	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 5 year
S-EX-P-C2-7-SD	Software, EX Series Premium license, Class 2 (24 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 24-port switches with SVC SAME DAY support, 7 year
S-EX-A-C3-1-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 1 year
S-EX-A-C3-3-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 3 year
S-EX-A-C3-5-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 1 year
S-EX-A-C3-7-SD	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Juniper Mist Wired Assurance and VNA subscription for EX Series 48-port switches with SVC SAME DAY support, 7 year

SKUs	Description
Mounting Options	
EX-4PST-RMK	4-Post Adjustable Rack Mount Kit for EX4400, EX4300, EX4100, EX3400, EX4100-F, EX4000 and EX2300 Switches
EX-RMK	Rack Mount Kit for EX4400, EX4300, EX4100, EX3400, EX4100-F, EX4000, and EX2300 Switches
EX4000-2PST-RMK	2-Post rack mount kit for EX4000 8 port and 12 port switches only
EX4000-WMK	Wall Mount Kit for EX4000 8 port and 12 port Switches only
EX4000-MMK	Magnet Mount Kit for EX4000 8 port and 12 port Switches only
EX4000-DRK	Din Rail Kit for EX4000 8 port and 12 port Switches only
EX4000-8-CGD	Cable Guard for EX4000-8P switch only
EX4000-12CGD	Cable Guard for EX4000-12T, EX4000-12P, and EX4000-12MP switches only

About Juniper Networks

Juniper Networks believes that connectivity is not the same as experiencing a great connection. Juniper's AI-Native Networking Platform is built from the ground up to leverage AI to deliver the best and most secure user experiences from the edge to the data center and cloud. You can find additional information at Juniper Networks (www.juniper.net) or connect with Juniper on X (Twitter), LinkedIn, and Facebook.

Corporate and Sales Headquarters

Juniper Networks, Inc.

1133 Innovation Way

Sunnyvale, CA 94089 USA

Phone: 888.JUNIPER (888.586.4737)

or +1.408.745.2000

www.juniper.net

APAC and EMEA Headquarters

Juniper Networks International B.V.

Boeing Avenue 240 1119 PZ Schiphol-Rijk

Amsterdam, The Netherlands

Phone: +31.207.125.700

Copyright 2025 Juniper Networks, Inc. All rights reserved. Juniper Networks, the Juniper Networks logo, Juniper, and Junos are registered trademarks of Juniper Networks, Inc. in the United States and other countries. All other trademarks, service marks, registered marks, or registered service marks are the property of their respective owners. Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.