The following documentation is an electronically-submitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at *wvOASIS.gov*. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at *WVPurchasing.gov* with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

Jump to: PRCUID Go Home Personalize Accessibility App Help About

Welcome, Robert M Ross

Procurement | Budgeting | Accounts Receivable | Accounts Payable

Solicitation Response(SR) Dept: 0506 ID: ESR04272200000006728 Ver.: 1 Function: New Phase: Final ▼ Modified by batch , 05/04/2022

Header 📎 6

List View

General Information | Contact | Default Values | Discount | Document Information | Clarification Request

Procurement Folder: 1027717

Procurement Type: Central Purchase Order

Vendor ID: 000000219154

Legal Name: SOFTWARE INFORMATION SYSTEMS LLC

Alias/DBA:

Total Bid: $182,925.00

Response Date: 04/27/2022

Response Time: 13:00

Responded By User ID: Sisllc

First Name: Charlie

Last Name: Arnett

Email: carnett@thinksis.com

Phone: 304-768-1645

SO Doc Code: CRFQ

SO Dept: 0506

SO Doc ID: WIC2200000002

Published Date: 4/27/22

Close Date: 5/4/22

Close Time: 13:30

Status: Closed

Solicitation Description: NETWORKING EQUIPMENT

Total of Header Attachments: 6

Total of All Attachments: 6

Proc Folder:	1027717
Solicitation Description:	NETWORKING EQUIPMENT
Proc Type:	Central Purchase Order

Solicitation Closes	Solicitation Response	Version
2022-05-04 13:30	SR 0506 ESR04272200000006728	1

VENDOR
000000219154
SOFTWARE INFORMATION SYSTEMS LLC

Solicitation Number:	CRFQ 0506 WIC2200000002				
Total Bid:	182925	**Response Date:**	2022-04-27	**Response Time:**	13:00:36

Comments:

FOR INFORMATION CONTACT THE BUYER
Crystal G Hustead
(304) 558-2402
crystal.g.hustead@wv.gov

Vendor
Signature X   **FEIN#**   **DATE**

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	24 Port Network Switch	49.00000	EA	1825.000000	89425.00

Comm Code	Manufacturer	Specification	Model #
84111600			

Commodity Line Comments: Delivery was stated as 60 days because of the current logistics issues but a firm date will be made with a firm order because a firm order gets precedence and should improve the delivery times.

Extended Description:

4.1.1 24 Port Network Switch

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	48 Port Network Switch	6.00000	EA	3500.000000	21000.00

Comm Code	Manufacturer	Specification	Model #
84111600			

Commodity Line Comments: Delivery was stated as 60 days because of the current logistics issues but a firm date will be made with a firm order because a firm order gets precedence and should improve the delivery times.

Extended Description:

Spec 4.1.2 48 Port Network Switch

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Routers and Security License	55.00000	EA	1200.000000	66000.00

Comm Code	Manufacturer	Specification	Model #
84111600			

Commodity Line Comments: Delivery was stated as 60 days because of the current logistics issues but a firm date will be made with a firm order because a firm order gets precedence and should improve the delivery times.

Extended Description:

4.1.3 and 3.5 Routers and Security License

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	Wireless Access Point, Management License & Service	10.00000	EA	650.000000	6500.00

Comm Code	Manufacturer	Specification	Model #
84111600			

Commodity Line Comments: Delivery was stated as 60 days because of the current logistics issues but a firm date will be made with a firm order because a firm order gets precedence and should improve the delivery times.

Extended Description:

4.1.4 9 and 10 Wireless Access Point, Management License & Service

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	Shipping and Delivery	1.00000	EA	0.000000	0.00

Comm Code	Manufacturer	Specification	Model #
84111600			

Commodity Line Comments: Delivery was stated as 60 days because of the current logistics issues but a firm date will be made with a firm order because a firm order gets precedence and should improve the delivery times.

Extended Description:

Shipping and Delivery

	Department of Administration Purchasing Division 2019 Washington Street East Post Office Box 50130 Charleston, WV 25305-0130	State of West Virginia Centralized Request for Quote Info Technology

Proc Folder:	1027717	Reason for Modification:
Doc Description:	NETWORKING EQUIPMENT	
Proc Type:	Central Purchase Order	

Date Issued	Solicitation Closes	Solicitation No	Version
2022-04-12	2022-04-28 13:30	CRFQ 0506 WIC2200000002	1

BID RECEIVING LOCATION

BID CLERK
DEPARTMENT OF ADMINISTRATION
PURCHASING DIVISION
2019 WASHINGTON ST E
CHARLESTON   WV   25305
US

VENDOR

Vendor Customer Code: FEIN # 61-1371685

Vendor Name :   Software Information Systems

Address :

Street :   165 Barr St

City :   Lexington

State :   KY   Country : USA   Zip : 40507

Principal Contact :   Karen Smallwood

Vendor Contact Phone: 859-398-3222   Extension:

FOR INFORMATION CONTACT THE BUYER
Crystal G Hustead
(304) 558-2402
crystal.g.hustead@wv.gov

Vendor
Signature X _Karen A. Smallwood_   FEIN# 61-1371685   DATE 4/27/2022

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION

THE STATE OF WEST VIRGINIA PURCHASING DIVISION FOR AGENCY, THE WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES, BUREAU FOR PUBLIC HEALTH, OFFICE OF NUTRITION SERVICES - WIC PROGRAM, IS SOLICITING BIDS TO ESTABLISH A CONTRACT FOR THE ONE TIME PURCHASE OF NETWORKING EQUIPMENT TO INCLUDE NETWORK SWITCHES, ROUTERS, AND WIRELESS ACCESS POINTS PER THE ATTACHED DOCUMENTS.

QUESTIONS REGARDING THE SOLICITATION MUST BE SUBMITTED IN WRITING TO CRYSTAL.G.HUSTEAD@WV.GOV PRIOR TO THE QUESTION PERIOD DEADLINE CONTAINED IN THE INSTRUCTIONS TO VENDORS SUBMITTING BIDS

INVOICE TO		SHIP TO	
HEALTH AND HUMAN RESOURCES BPH - NUTRITION SERVICES 350 CAPITOL ST, RM 519 CHARLESTON US	WV	OFFICE OF HEALTH FACILITIES 160 JACOBSON DRIVE DOCK 11 POCA US	WV

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	24 Port Network Switch	49.00000	EA	1825.00	89425.00

Comm Code	Manufacturer	Specification	Model #
84111600	Juniper		EX2300-24P

Extended Description:
4.1.1 24 Port Network Switch

INVOICE TO		SHIP TO	
HEALTH AND HUMAN RESOURCES BPH - NUTRITION SERVICES 350 CAPITOL ST, RM 519 CHARLESTON US	WV	OFFICE OF HEALTH FACILITIES 160 JACOBSON DRIVE DOCK 11 POCA US	WV

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	48 Port Network Switch	6.00000	EA	3500	21000

Comm Code	Manufacturer	Specification	Model #
84111600	Juniper		EX3400-48P

Extended Description:
Spec 4.1.2 48 Port Network Switch

INVOICE TO		SHIP TO	
HEALTH AND HUMAN RESOURCES BPH - NUTRITION SERVICES 350 CAPITOL ST, RM 519 CHARLESTON WV US		OFFICE OF HEALTH FACILITIES 160 JACOBSON DRIVE DOCK 11 POCA WV US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Routers and Security License	55.00000	EA	1288.55	66,000

Comm Code	Manufacturer	Specification	Model #
84111600	Juniper		SRX300-SYS JB

Extended Description:
4.1.3 and 3.5 Routers and Security License

INVOICE TO		SHIP TO	
HEALTH AND HUMAN RESOURCES BPH - NUTRITION SERVICES 350 CAPITOL ST, RM 519 CHARLESTON WV US		OFFICE OF HEALTH FACILITIES 160 JACOBSON DRIVE DOCK 11 POCA WV US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Wireless Access Point, Management License & Service	10.00000	EA	650.00	6500.00

Comm Code	Manufacturer	Specification	Model #
84111600	Juniper Mist		AP32-US

Extended Description:
4.1.4 9 and 10 Wireless Access Point, Management License & Service

INVOICE TO		SHIP TO	
HEALTH AND HUMAN RESOURCES BPH - NUTRITION SERVICES 350 CAPITOL ST, RM 519 CHARLESTON WV US		OFFICE OF HEALTH FACILITIES 160 JACOBSON DRIVE DOCK 11 POCA WV US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Shipping and Delivery	1.00000	EA		

Comm Code	Manufacturer	Specification	Model #
84111600			

Extended Description:
Shipping and Delivery

SCHEDULE OF EVENTS

Line	Event	Event Date
1	VENDOR QUESTION DEADLINE	2022-04-19

SKU	Description	Quantity	Unit	Extended
EX2300-24P		49	$1,825.00	$89,425.00
EX2300-24P	EX3400 24-port 10/100/1000BaseT PoE+, 4 x 1/10G SFP/SFP+, 2 x 40G QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-600-AC-AFO included (optics sold separately)	49		
SUB-EX24-2S-5Y-N	5 Year Wired Assurance and Virtual Network Assistant (VNA) Subscription for EX24 port switches ; Wired Assurance Subscription includes network insights; Juniper Care Next Day Support for EX2300, EX3400, EX4300 24 port switches	49		
EX3400-48P		6	$3,500.00	$21,000.00
EX3400-48P	EX3400 48-port 10/100/1000BaseT PoE+, 4 x 1/10G SFP/SFP+, 2 x 40G QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-920-AC-AFO included (optics sold separately)	6		
SUB-EX48-2S-5Y-N	5 Year Wired Assurance and VNA Subs for EX48 port switches ; Wired Assurance Subscription includes network insights; Juniper Care Next Day Support for EX2300, EX3400, EX4300 48 port switches	6		
AP32-US		10	$650.00	$6,500.00
AP32-US	Superior Performance Multigigabit WiFi 6 802.11ax Access Point (6 stream) with Bluetooth Low Energy, with built-in Internal Antenna. For US only; Universal Mounting Bracket is included;	10		

S-AP-S-C2-5	Standard WiFi Assurance (SUB-MAN) for Class 2 (AP12,AP32,AP34), 5 year; includes upgrades,cloud function subscriptions and limited lifetime warranty benefits on indoor access points	10		
SRX300-SYS-JB		55	$1,200.00	$66,000.00
SRX300-SYS-JB	SRX300 Services Gateway includes hardware (8GE, 4G RAM, 8G Flash, power adapter and cable) and Junos Software Base (Firewall, NAT, IPSec, Routing, MPLS and Switching). RMK not included	55		
S-SRX-A-C1-5-ND	Advanced WAN Assurance for Class 1 (SRX300,SRX320), includes WAN Assurance , Application Visibility & Marvis VNA, 5 year ; includes gateway insights & SLEs, software updates & upgrades for cloud subscription; Juniper Care 5 Year Prepaid Next Day Support for Class1 devices SRX300 and SRX320 managed by MIST	55		
		Total:		$182,925.00

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Name, Title) *Karen Smallwood, Director of C&C*

(Printed Name and Title) _____ Karen Smallwood, Director of Contracts and Compliance

(Address) _____ 165 Barr Street, Lexington, KY 40507

(Phone Number) / (Fax Number) 859-977-4796/859-977-4750

(email address) _____ Karen.Smallwood@convergetp.com

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Software Information Systems
_____
(Company)

Karen A. Smallwood
_____
(Authorized Signature) (Representative Name, Title)
Karen Smallwood, Director of Contracts and Compliance

(Printed Name and Title of Authorized Representative) (Date)
859-977-4796/859-977-4750
_____
(Phone Number) (Fax Number)

Karen.Smallwood@convergetp.com
_____
(Email Address)

Revised 04/01/2022

State of West Virginia

By: _____

Printed Name: _____

Title: _____

Date: _____

Vendor Name:

By: _Karen A. Smallwood_

Printed Name: Karen Smallwood

Title: Director of Contracts and Compliance

Date: 4/27/2022

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceed five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (*W. Va. Code* §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: Software Information Systems

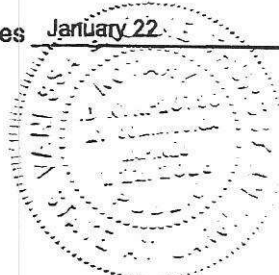Authorized Signature: *Karen A. Smallwood*   Date: 4/27/2022

State of Kentucky

County of Fayette , to-wit:

Taken, subscribed, and sworn to before me this 27th day of April , 20 22 .

My Commission expires January 22 , 20 25 .

AFFIX SEAL HERE   NOTARY PUBLIC *Vanessa B. Mure*

Purchasing Affidavit (Revised 01/19/2018)

JUNIPER AP32 ACCESS POINT

Product Overview

The AP32 series automates network operations and boosts Wi-Fi performance. It delivers an aggregate data rate of up to 3 Gbps concurrently on 2.4GHz and 5GHz radios. Managed by the Juniper Mist™ Cloud Architecture, the AP32 series delivers unprecedented user experiences at a lower cost for retail, warehouse, school, clinic, and home office environments.

Juniper AI-Driven Network

Juniper brings true innovation to the wireless space with the world's first AI-driven wireless LAN (WLAN).

The Juniper AI-Driven Enterprise makes Wi-Fi predictable, reliable, and measurable with unprecedented visibility into the user experience through customizable service level expectation (SLE) metrics. Time-consuming manual IT tasks are replaced with AI-driven proactive automation and self-healing, lowering Wi-Fi operational costs and saving substantial time and money.

All operations are managed via our open and programmable microservices architecture, which delivers maximum scalability and performance while also bringing DevOps agility to wireless networking and location services.

The Juniper Mist Cloud Architecture

Mist AI leverages a cloud-native microservices architecture to bring unparalleled agility, scale, and resiliency to your network. It leverages an AI engine to lower OpEx and deliver unprecedented insight by using data science to analyze large amounts of rich metadata collected from Juniper Access Points.

Juniper Access Point Family

The Juniper enterprise-grade access point family consists of:

- AP45 and AP34 Series which support Wi-Fi 6E, 802.11ax (Wi-Fi 6), and Bluetooth LE
- AP43, AP12, AP32, AP33, and AP63 Series, which support 802.11ax (Wi-Fi 6), Bluetooth LE, and IoT
- AP21, AP41, and AP61 Series, which support 802.11ac Wave 2, Bluetooth LE, and IoT
- BT11, which supports Bluetooth LE

These access points are all built on a real-time microservices platform and are managed by the Juniper Mist cloud.

The table below compares the supported major functions of the Juniper Wi-Fi 6E and Wi-Fi 6 access points to help in selecting the most appropriate model(s).

	AP45	AP34	AP43	AP63	AP33	AP32	AP12
Deployment	Indoor	Indoor	Indoor	Outdoor	Indoor	Indoor	Indoor Wall Plate/Desk Mount
Wi-Fi Standard	802.11ax (Wi-Fi 6) 4x4 : 4SS	802.11ax (Wi-Fi 6) 2x2 : 2SS	802.11ax (Wi-Fi 6) 4x4 : 4SS	802.11ax (Wi-Fi 6) 4x4 : 4SS	802.11ax (Wi-Fi 6) 5GHz: 4x4 : 4SS 2.4GHz: 2x2 :2SS	802.11ax (Wi-Fi 6) 5GHz: 4x4 : 4SS 2.4GHz: 2x2 : 2SS	802.11ax (Wi-Fi 6) 2x2 : 2SS
Wi-Fi Radios	Dedicated fourth radio	Dedicated fourth radio	Dedicated third radio	Dedicated third radio	Dedicated third radio	Dedicated third radio	Dedicated third radio
Antenna Options	Internal/External	Internal	Internal/External	Internal/External	Internal	Internal/External	Internal
Virtual BLE	✓	—	✓	✓	✓	—	—
IoT Interface	—	—	✓	—	—	—	—
IoT Sensors	Temperature, Accelerometer	Temperature	Humidity, Pressure, Temperature	—	—	—	—
Warranty	Limited Lifetime	Limited Lifetime	Limited Lifetime	One Year	Limited Lifetime	Limited Lifetime	Limited Lifetime
Frequencies Supported	2.4GHz 5GHz 6GHz	2.4GHz 5GHz 6GHz	2.4GHz 5GHz	2.4GHz 5GHz	2.4GHz 5GHz	2.4GHz 5GHz	2.4GHz 5GHz

Services Available for the Juniper AP32

Wi-Fi Cloud Services

Juniper Mist Wi-Fi Assurance

For IT and NOC Teams
- Predictable and Measurable Wi-Fi
- Service-Level Expectation (SLE) Support
- WxLAN Policy Fabric for Role-Based Access
- Customizable Guest Wi-Fi Portal
- Radio Resource Management

Marvis Virtual Assistant

For IT Helpdesk Teams
- AI-Powered Virtual Network Assistant
- Natural Language Processing Conversational Interface
- Anomaly Detection
- Client SLE Visibility and Enforcement
- Data Science-Driven Root-Cause Analysis

Bluetooth Cloud Services

Juniper Mist Asset Visibility

For Process and Resource Improvement Teams
- Identification of Assets by Name and View Location
- Zonal/Room Accuracy for Third-Party Tags
- Historical Analytics for Asset Tags
- Telemetry for Asset Tags (temperature, motion, and other data)
- APIs for Viewing Assets and Analytics

Analytics Cloud Services

Juniper Mist Premium Analytics

For Network Teams
- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
- End-to-End Network Visibility
- Orchestrated Networking and Application Performance Queries
- Simplified Network Transparency

For Business Teams
- Baseline Analytics Features Come Included with Wi-Fi Assurance, Mobile Engagement, and Asset Visibility Subscriptions
- Customer Segmentation and Reporting Based on Visitor Telemetry
- Customized* Dwell and Third-Party Reporting for Traffic and Trend Analysis
- Correlated Customer-Guest Traffic and Trend Analysis

Access Point Features

High Performance Wi-Fi

The AP32 series offers six-stream wireless access points. They support 4x4:4SS in the 5GHz band, delivering a maximum data rate of 2,400 Mbps for high-bandwidth applications. They also support 2x2:2SS in the 2.4 GHz band, delivering a maximum data rate of 575 Mbps. The integrated third radio functions as a network, location, and security sensor, a synthetic test client radio, as well as a spectrum monitor.

With 802.11ax Orthogonal Frequency Division Multiple Access (OFDMA), Multi-User Multiple Input Multiple Output (MU-MIMO), and BSS Coloring technologies supported, AP32 series performance reaches unprecedented levels to support new bandwidth-hungry applications and soaring device densities.

AI for AX

With the new features that 802.11ax (Wi-Fi 6) introduces to boost performance and efficiency, configuring and operating an access point has grown far more complex. Juniper automates and optimizes these features with our AI for AX capabilities, which improve data transmission scheduling within OFDMA and MU-MIMO and assign clients to the best radio to boost the overall performance of the network.

Greater Spectral Efficiency

OFDMA improves spectral efficiency so that an increasing density of devices can be supported on the network. Density has become an issue with the rapid growth of IoT devices, which often utilize smaller data packets than mobile devices and hence increase contention on the network. Additionally, BSS Coloring improves the coexistence of overlapping BSSs and allows spatial reuse within a given channel by reducing packet collisions.

Automatic RF Optimization

Radio Resource Management automates dynamic channel and power assignment, taking Wi-Fi and external sources of interference into account with its dedicated sensor radio. The AI engine continuously monitors coverage and capacity SLE metrics to learn and optimize the RF environment. The learning algorithm uses hysteresis on a 24-hour window to conduct a sitewide rebalancing for optimal channel and power assignment.

Unprecedented Insight and Action

A dedicated, dual-band third radio collects data for Juniper's patent-pending Proactive Analytics and Correlation Engine (PACE), which uses machine learning to analyze user experience, correlate problems, and automatically detect their root cause.

These metrics are used to monitor SLEs and provide proactive recommendations to ensure problems don't occur (or are fixed as quickly as possible when they do). This radio also functions as a synthetic test client to proactively detect and mitigate network anomalies.

Dynamic Packet Capture

The Juniper Mist platform automatically captures packets and streams them to the cloud when major issues are detected. This saves IT time and effort and eliminates the need for truck rolls with sniffers to reproduce and capture data for troubleshooting.

Marvis Virtual Conversational Assistant

Marvis is a natural language processing (NLP)-based assistant with a Conversational Interface to understand user intent and goals, simplifying troubleshooting and the collection of network insights. It uses AI and data science to proactively identify issues, determine the root causes and scope of impact, and gain insights into your network and user experiences. It eliminates the need to manually hunt through endless dashboards and CLI commands.
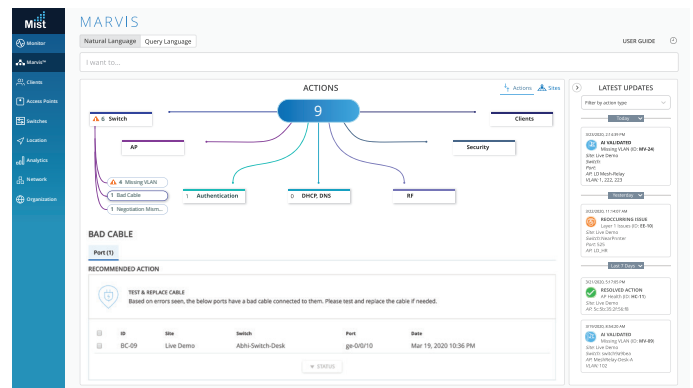

Effortless, Cloud-Based Setup and Updates

The AP32 series automatically connects to the Juniper Mist cloud, downloads its configuration, and joins the appropriate network. Firmware updates are retrieved and installed automatically, ensuring that the network is always up to date with new features, bug fixes, and security updates.

*Juniper Mist Premium Analytics service subscription is needed

Premium Analytics

Juniper Mist Wi-Fi Assurance, User Engagement, and Asset Tracking services include a base analytics capability for analyzing up to 30 days of data, which enables you to simplify the process of extracting network insights across your enterprise. If you require dynamic insights like motion paths* and other third-party* data and would like the option of customized reports, the Juniper Mist Premium Analytics service is available as an additional subscription.
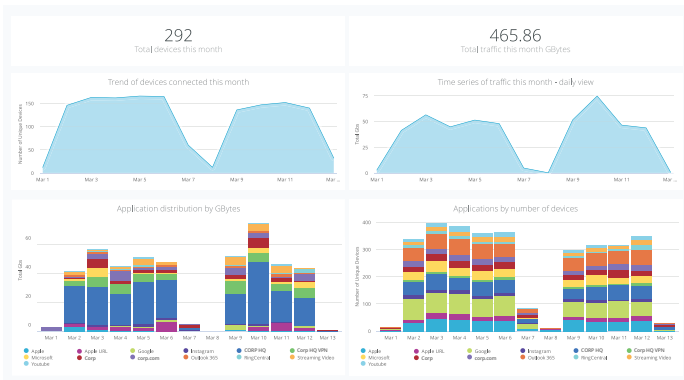

Improves Battery Efficiency for IoT Devices

By incorporating the 802.11ax target wake time (TWT) capability and Bluetooth 5.0, AP32 access points help extend the battery life of IoT devices, particularly as additional ones join the network.

Dynamic Debugging

Constantly monitor services running on the AP32 series and send alerts whenever a service behaves abnormally. Dynamic debugging relieves IT of having to worry about an AP going offline or any services running on it becoming unavailable.
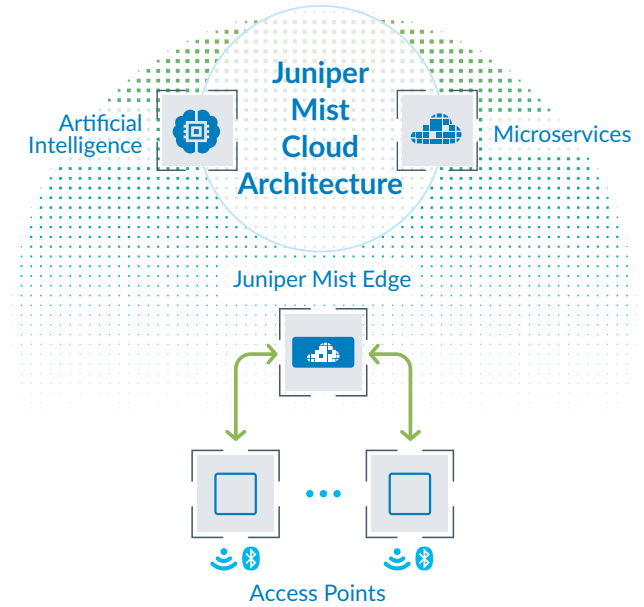
Juniper Mist Edge

Juniper Mist Edge is an on-premises appliance that runs a tunnel termination service. Juniper APs offer a flexible data plane. Traffic can be broken out locally, or tunneled to Juniper Mist Edge. There are many use cases the Juniper Mist Edge solves, including seamless mobility in large campus environments, tunneling of guest traffic to a DMZ, IoT segmentation, and teleworker. Learn more about Juniper Mist Edge.

AP32
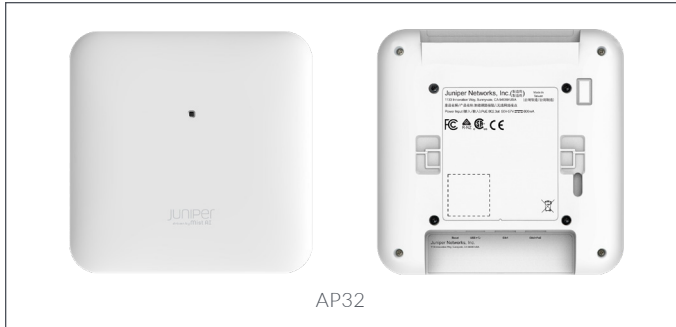
Specifications

Wi-Fi Standard	802.11ax (Wi-Fi 6), including support for OFDMA, 1024-QAM, MU-MIMO, Target Wake Time (TWT), Spatial Frequency Reuse (BSS Coloring). Backwards compatibility with 802.11a/b/g/n/ac
Combined Highest Supported Data Rates	3.0 Gbps
2.4 GHz	2x2 : 2 802.11b/g/n/ac up to 400 Mbps data rate; 2x2 : 2 802.11ax up to 575 Mbps data rate
5 GHz	4x4 : 4 802.11ax up to 2,400 Mbps data rate
MIMO Operation	Four spatial stream SU-MIMO for up to 2,400 Mbps wireless data rate to individual 4x4 HE80 Four spatial stream MU-MIMO for up to 2,400 Mbps wireless data rate to up to four MU-MIMO-capable client devices simultaneously
Dedicated Third Radio	2.4GHz and 5GHz dual-band WIDS/WIPS, spectrum analysis, synthetic client and location analytics radio
Internal Antennas	Two 2.4GHz omnidirectional antennas with 5 dBi peak gain Four 5GHz omnidirectional antennas with 6 dBi peak gain
Bluetooth 5.0	Omnidirectional Bluetooth antenna Supports superbeacon mode with iBeacon and Eddystone
Beam Forming	Transmit Beamforming and Maximal Ratio Combining

Power Options	802.3at PoE, 802.3bt PoE
Dimensions	202 x 202 x 44 mm (7.95 x 7.95 x 1.73 in)
Weight	0.83 kg (1.83 lbs) excluding mount and accessories AP32E: 0.81 kg (1.78 lbs) excluding mount and accessories
Operating Temperature	Internal antenna: 0° to 40° C External antenna: -20° to 50° C
Operating Humidity	10% to 90% maximum relative humidity, non-condensing
Operating Altitude	3,048 m (10,000 ft)
Mean Time Between Failures (MTBF)	Indoor MTBF in hours is 846,297*
Trusted Platform Module (TPM)	Includes a TPM for infrastructure security

*Based on Telcordia SR-332 issue 3, Method I, Case 3 and measured at temperature of 25°C (77°F) for indoor access points, and 65°C (149°F) for outdoor access points.

I/O and Indicators

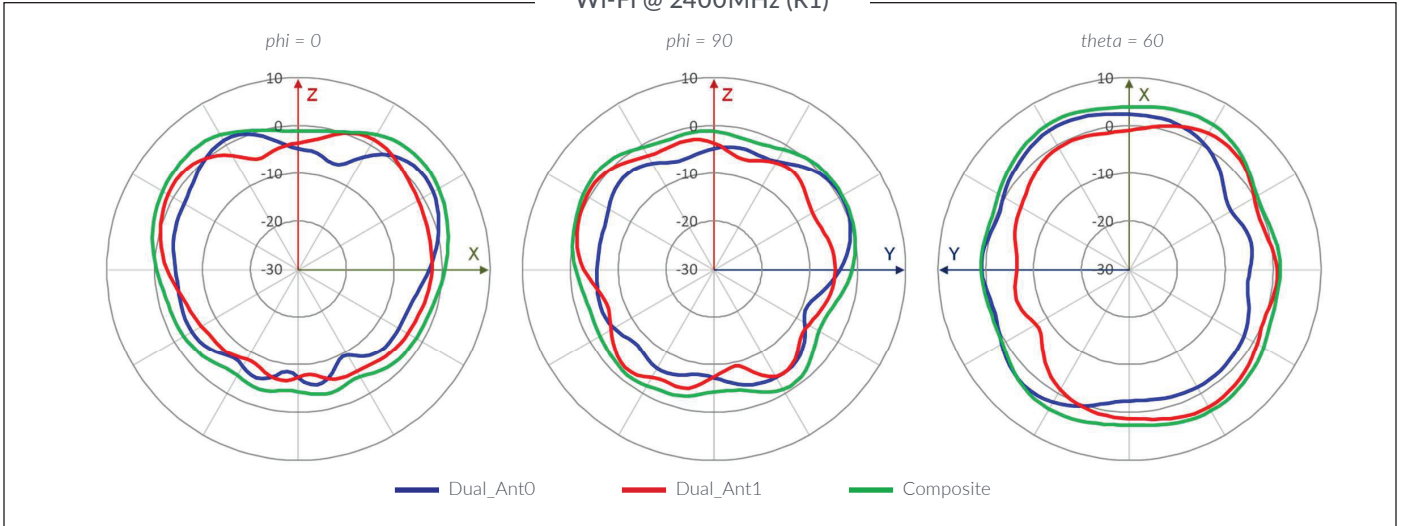|	
USB	USB 2.0 support interface
Eth0	100/1000Base-T, 2.5GBase-T (802.3bz); RJ45; PoE PD
Eth1	10/100/1000Base-T; RJ45
External Antennas (AP32E)	Five RP-SMA: four for Wi-Fi data; one for sensor. Male connectors
Reset	Reset to the factory default settings
Indicators	One multicolor status LED

Mounting Brackets

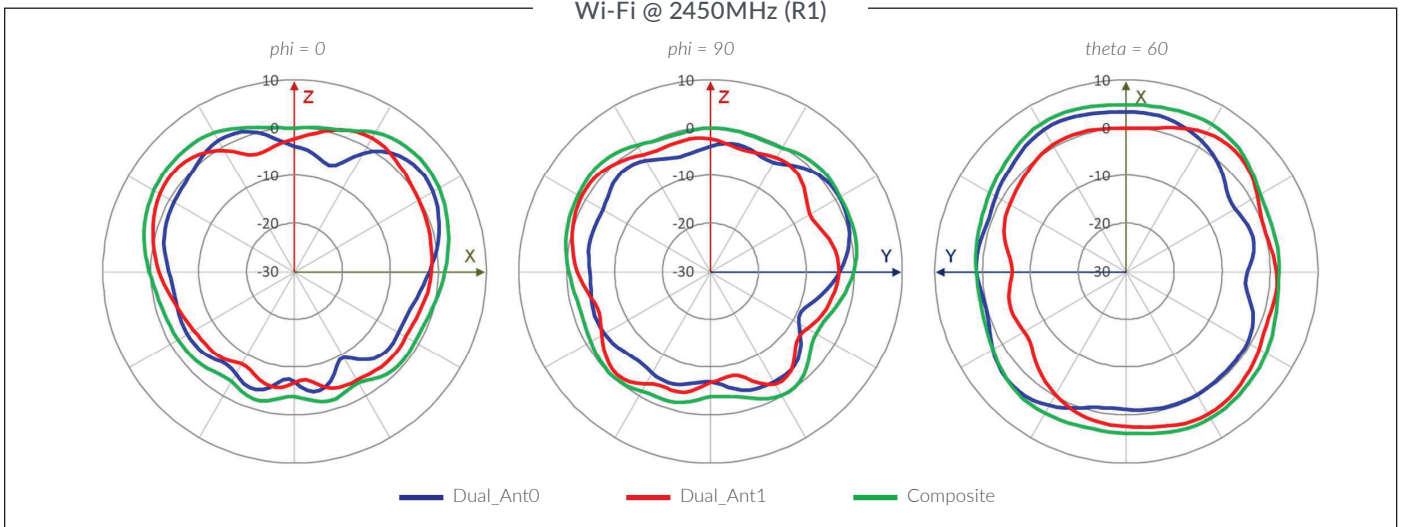|	
APBR-U*	Universal bracket
APBR-T58	⅜" threaded rod
APBR-M16	16mm threaded rod (M16-2)
APBR-ADP-CR9	⁹⁄₁₆" T-Rail
APBR-ADP-RT15	¹⁵⁄₁₆" T-Rail
APBR-ADP-WS15	1½" T-Rail
APBR-ADP-T12	½" threaded rod

*The AP package includes one Universal Bracket. APBR-U is available separately as an accessory.
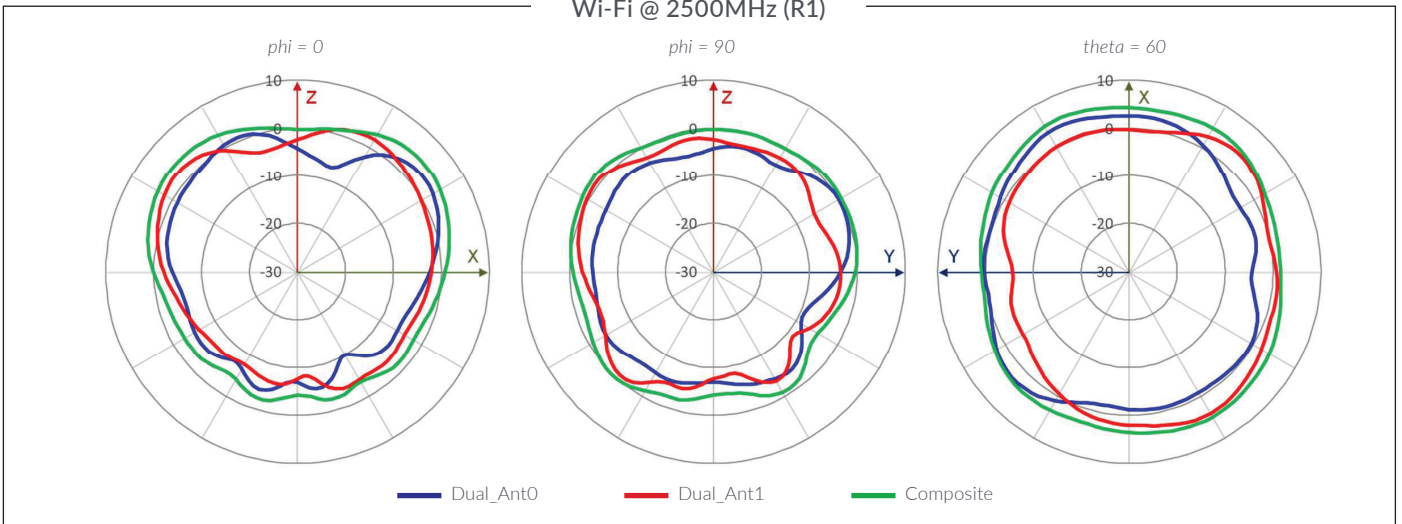
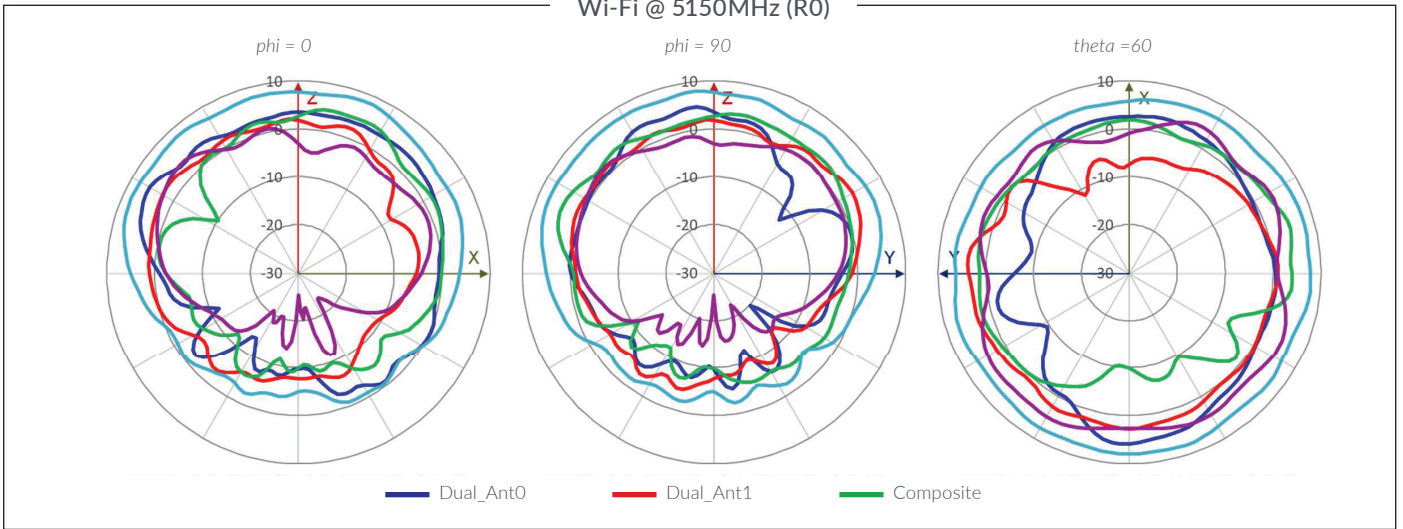## AP32 Wi-Fi Antenna Plots

Wi-Fi @ 2400MHz (R1)

phi = 0   *phi = 90*   *theta = 60*

— Dual_Ant0   — Dual_Ant1   — Composite

Wi-Fi @ 2450MHz (R1)

phi = 0   *phi = 90*   *theta = 60*

— Dual_Ant0   — Dual_Ant1   — Composite

Wi-Fi @ 2500MHz (R1)

phi = 0   *phi = 90*   *theta = 60*
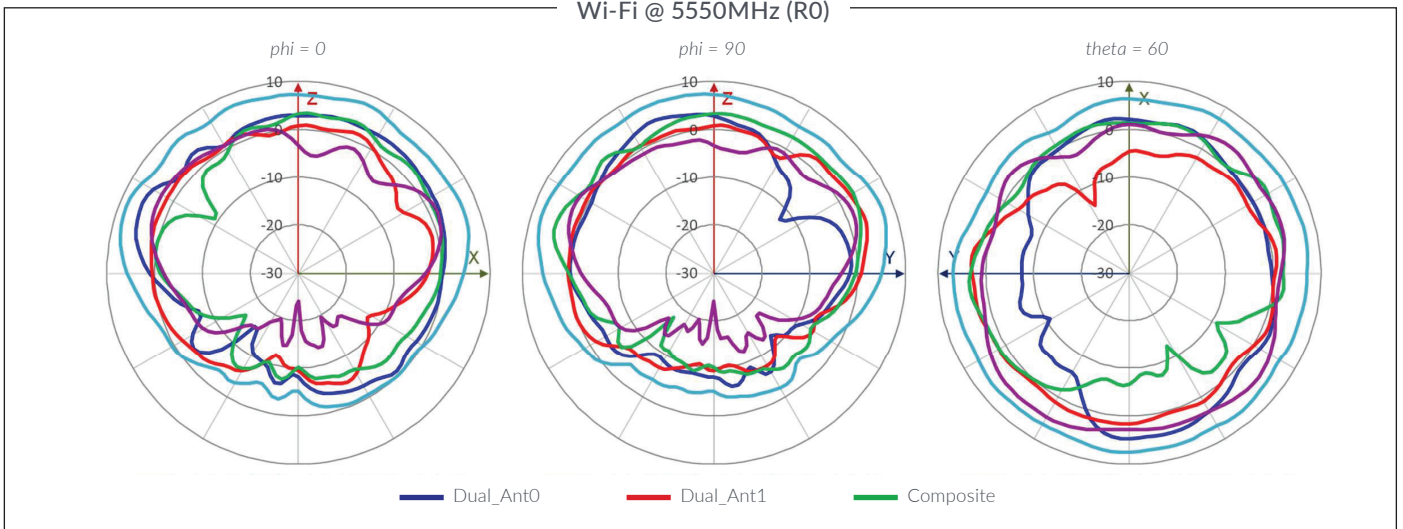
— Dual_Ant0   — Dual_Ant1   — Composite
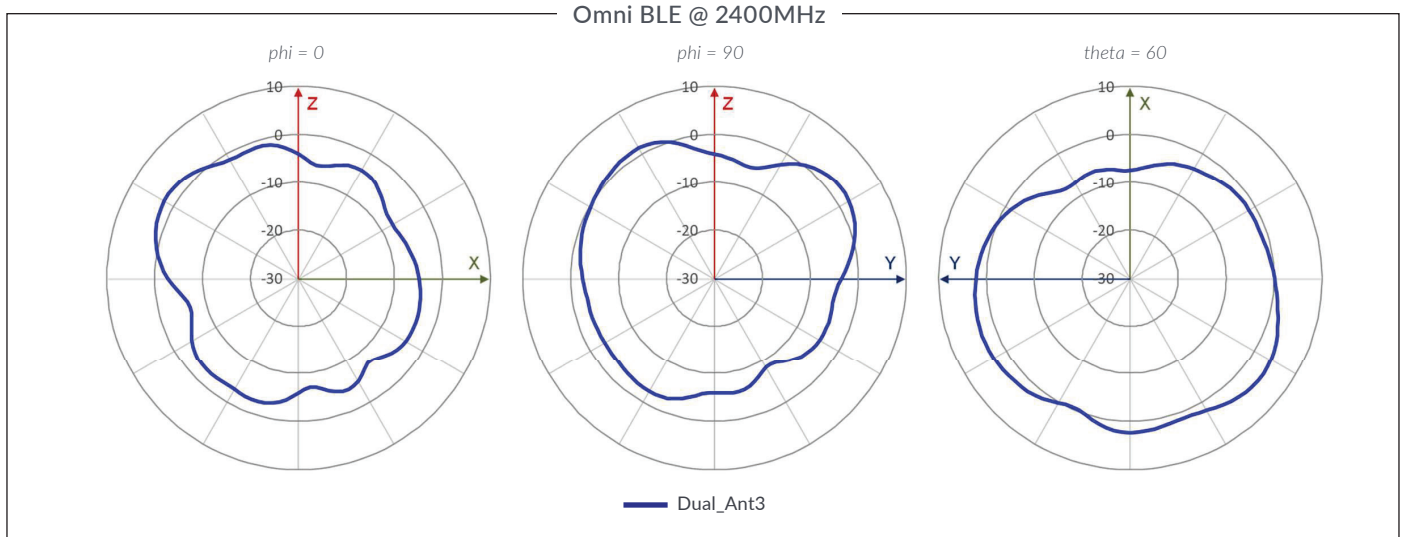
AP32 Wi-Fi Antenna Plots

Wi-Fi @ 5150MHz (R0)

phi = 0 *phi = 90* *theta =60*

— Dual_Ant0 — Dual_Ant1 — Composite

Wi-Fi @ 5550MHz (R0)

phi = 0 *phi = 90* *theta = 60*

— Dual_Ant0 — Dual_Ant1 — Composite

Wi-Fi @ 5850MHz (R0)

phi = 0 *phi = 90* *theta = 60*

— Dual_Ant0 — Dual_Ant1 — Composite
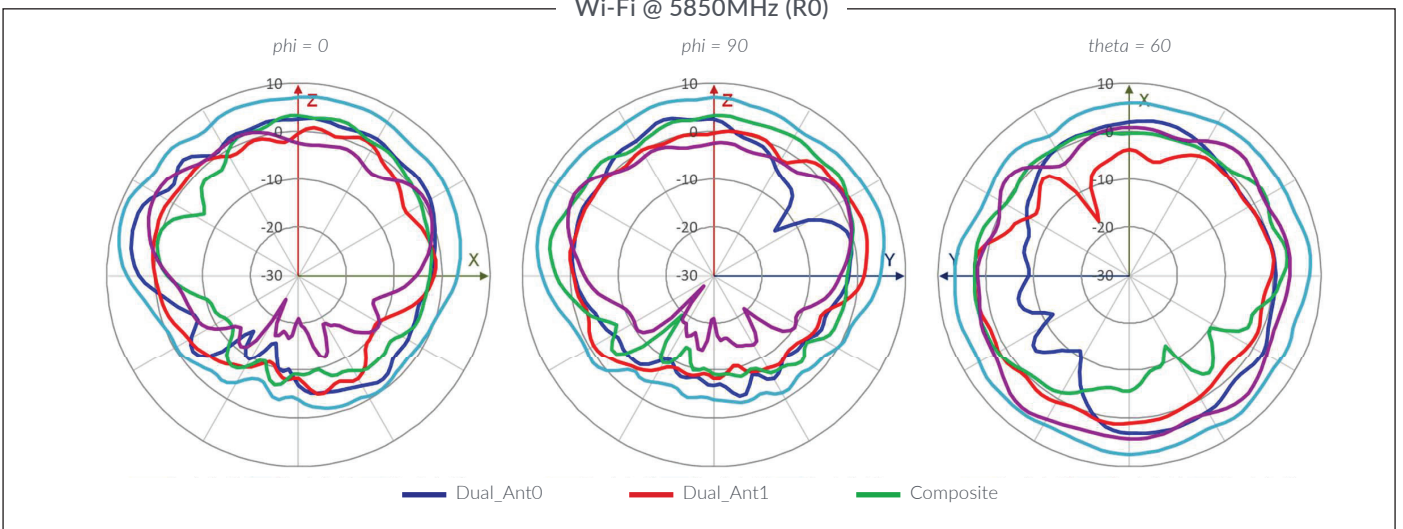
AP32 Omni BLE Antenna Plots

Omni BLE @ 2400MHz

phi = 0   phi = 90   theta = 60

Dual_Ant3

Omni BLE @ 2440MHz

phi = 0   phi = 90   theta = 60

Dual_Ant3

Omni BLE @ 2480MHz

phi = 0   phi = 90   theta = 60

Dual_Ant3

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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

EX2300 ETHERNET SWITCH

Product Overview

The Juniper Networks EX2300 Ethernet Switch offers an economical, entry-level, standalone solution for access-layer deployments in branch and remote offices, as well as enterprise campus networks. Both 1 Gbps and 2.5 Gbps access port options are available to provide higher-speed options, especially when connecting to 802.11ac Wave 2 access points.

For small networks, up to four EX2300 switches can be interconnected in a Virtual Chassis configuration, allowing them to be managed as a single switch.

The EX2300 is onboarded, provisioned, and managed in the Juniper Mist Cloud Architecture. Mist Wired Assurance delivers better experiences for connected devices through AI-powered automation and service levels.

Product Description

The Juniper Networks® EX2300 line of Ethernet switches offers a compact, high-performance solution for supporting today's converged network access deployments.

Each EX2300 switch includes an ASIC-based Packet Forwarding Engine (PFE) with an integrated CPU to consistently deliver wire-rate forwarding, even with all control plane features enabled. Based on existing, field-proven Juniper Networks technology, the PFE brings the same level of carrier-class performance and reliability to the EX2300 switches that Juniper Networks routers bring to the world's largest service provider networks.

Select EX2300 models also support the 802.3af Class 3 Power over Ethernet (PoE) and 802.3at PoE+ standards for supporting networked devices such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones in converged networks. The PoE-enabled EX2300 switches include a maximum system budget of 750 watts to deliver up to 30 watts to select ports.

Multiple EX2300 models are available, including versions offering multigigabit (up to 2.5 Gbps) PoE+ access ports that can accommodate higher-speed IEEE 802.11ac Wave 2 access points, enabling the switches to support more wireless users.

The EX2300 fixed-configuration Ethernet switches provide exceptional value to enterprise customers by supporting the following key technologies:

- Virtual Chassis technology enables up to four interconnected EX2300 switches to form a single logical device.
- Flexible 1GbE SFP/10GbE SFP+ uplinks provide high-speed connectivity to aggregation layer switches or other upstream devices.
- Up to 48 10/100/1000BASE-T ports are available with or without PoE/PoE+.
- Models offering 24 and 48 multigigabit ports support 1GbE/2.5GbE on 8 and 16 ports, respectively
- Energy Efficient Ethernet (EEE) support is provided on 1GbE ports.
- Complete Layer 2 and basic Layer 3 switching capabilities are available.
- Simplified onboarding and management with Juniper Mist Wired Assurance.

Additional features include:

- PoE-enabled EX2300 switches can simultaneously deliver up to 15.4 watts of standards-based 802.3af Class 3 PoE to a maximum of 48 ports or 30 watts of standards-based 802.3at PoE+ to a maximum of 24 ports, based on a total system budget of 750 watts.
- Uplink ports can be configured as Virtual Chassis interfaces and connected via standard 10GbE optics interfaces (optional Virtual Chassis license required).

- Fixed power supply and uplink ports ensure operational simplicity.
- Low power consumption, low acoustic fans, and a small 10-inch deep footprint enable flexible, environmentally friendly deployment.
- Support for L2 protocols as well as L3 protocols like RIP and static routing are included in the base license.
- Support is available for IPv6 management, including neighbor discovery, telnet, SSH, DNS, system log, and NTP.
- A single release train for Juniper Networks Junos operating system is supported to ensure a consistent control plane feature implementation.
- Modular Junos OS prevents a switch reboot if a single protocol feature fails.
- Built-in Web interface (Juniper Networks J-Web Software) is provided.
- RJ-45 serial console port is available.
- USB mini console port is included on 1GbE access switch models.
- Out-of-band Ethernet management port is provided.
- Reduction of Hazardous Waste (RoHS) is certified.

Architecture and Key Components

The EX2300 occupies a single rack unit, delivering a compact solution for crowded wiring closets and access locations where space and power are at a premium. The EX2300 switch's 10-inch/12-inch depth and low acoustics also make it ideal for open office deployments. For silent operation requirements, please see the EX2300-C, a c ompact, fanless version of the EX2300.

Each EX2300 switch supports four fixed front-panel 1GbE/10GbE uplink ports (six 1/10GbE uplink ports on the 48-port multigigabit model) with pluggable optics (purchased separately) for high-speed backbone or link aggregation connections between wiring closets and upstream aggregation switches. The 1GbE EX2300 access switch models also feature a front-panel mode button that offers a simple interface for bringing devices up and selecting LED modes.

A dedicated rear panel RJ-45 Ethernet port is available for outof-band management, while a rear panel USB port can be used to easily upload the Junos OS and configuration files.

Cloud Management with Juniper Mist Wired Assurance

Juniper Mist Wired Assurance, a cloud-based service driven by Mist AI to claim, configure, manage, and troubleshoot the EX2300, delivers AI-powered automation and service levels to ensure a better experience for connected devices. Wired Assurance leverages rich Junos switch telemetry data to simplify operations, reduce mean time to repair, and improve visibility. Wired Assurance offers the following features:

- **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 such as throughput, successful connects, and switch health with key pre- and post-connection metrics (see Figure 1). 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). And perform software upgrades easily through Juniper Mist cloud.
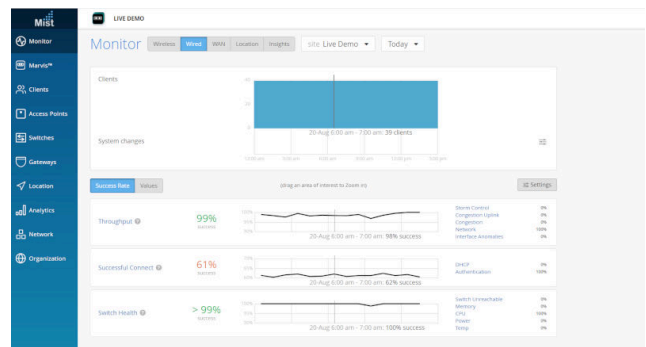

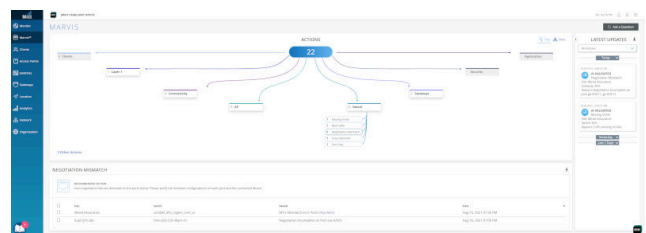Figure 1: Juniper Mist Wired Assurance service-level expectations

Figure 2: Marvis Actions for wired switches

The addition of Marvis, a complementary Virtual Network Assistant driven by Mist AI, lets you start building a self-driving network that simplifies network operations and streamlines troubleshooting via automatic fixes for EX Series switches or recommended actions for external systems.

For more information see Juniper Mist Wired Assurance.

Virtual Chassis Technology

The EX2300 supports Juniper's unique Virtual Chassis technology, enabling up to four interconnected EX2300 switches to be managed as a single logical device, delivering a scalable, pay-as-you-grow solution for expanding network environments.

While EX2300 switches can be interconnected over any of the front-panel uplink ports using standard 10GbE SFP+ transceivers (sold separately), these ports can also be configured as 1GbE/10GbE uplinks to aggregation devices by disabling the Virtual Chassis technology.

When deployed in a Virtual Chassis configuration, the EX2300 switches elect a primary and a backup switch based on a set of preconfigured policies or criteria. The primary switch automatically creates and updates the switching and optional routing tables on all other Virtual Chassis switch members. Switches can be added to or removed from the Virtual Chassis configuration without service disruption.

EX2300 Virtual Chassis configurations operate as highly resilient unified systems, providing simplified management using a single IP address, single telnet session, single command-line interface (CLI), automatic version checking, and automatic configuration. The EX2300 switches are also capable of local switching, so packets coming into a port destined for another port on the same switch do not have to traverse the Virtual Chassis, increasing forwarding capacities.

EX2300 Virtual Chassis configurations implement the same slot/module/port numbering schema as other Juniper Networks chassis-based products, 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, simplifying overall system maintenance and management.

Multigigabit Switches

IEEE 802.11ac Wave 2 access points require switch ports capable of handling up to 2.5 Gbps in order to support the growing number of wireless devices and the amount of traffic they produce. To address this need, specific multigigabit EX2300 models now offer 1 Gbps and 2.5 Gbps access ports to support these increased bandwidth requirements over existing Category 5e cabling. These switches run the same Junos image and support all the same software features as other EX2300 models.

The EX2300 multigigabit switches can interoperate with other EX Series switches in Virtual Chassis deployments, protecting existing customer investments by enabling them to add multigigabit support to their existing Juniper network deployments.

The EX2300 multigigabit switches support PoE+ on all access ports, provided the power demand is within the PoE budget.

Table 1: EX2300 multigigabit switches

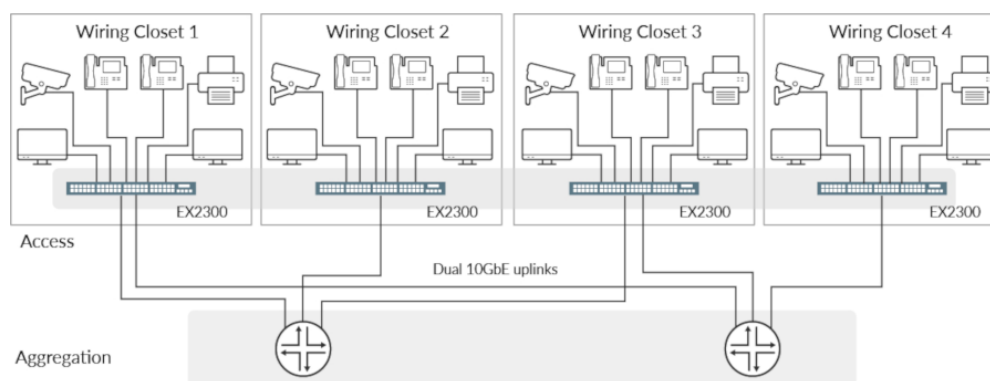| Model	1 Gbps Ports	1/2.5 Gbps Ports	PoE/ PoE+	Uplinks	Fans	Air Flow
EX2300- 24MP	8-23	0-7	All access ports	4 SFP+	3	Side-side
EX2300- 48MP	0-15; 32-47	16-31	All access ports	6 SFP+	4	Side-side

Figure 3: EX2300 switches support Virtual Chassis technology, which enables up to four interconnected switches to operate as a single, logical device.

Virtual Chassis technology simplifies network management for smaller deployments. Up to four interconnected EX2300 switches can be managed as a single device utilizing a single Junos OS image and a single configuration file, reducing the overall number of units to monitor and manage. When the Junos OS is upgraded on the primary switch in an EX2300 Virtual Chassis configuration, the software is automatically upgraded on all other member switches at the same time.

The EX2300 includes port profiles that allow network administrators to automatically configure ports with security, QoS, and other parameters based on the type of device connected to the port. Six preconfigured profiles are available, including default, desktop, desktop plus IP phone, WLAN access point, routed uplink, and Layer 2 uplink. Users can select from the existing profiles or create their own and apply them through the command-line interface (CLI), J-Web Software interface, or management system.

In addition, a feature called system snapshot makes a copy of all software files used to run the switch—including the Junos operating system, the active configuration, and the rescue configuration. These files can be used to reboot the switch at the next power-up or as a backup boot option. The Junos OS software can also be preinstalled on a flash drive and used to boot the EX2300 at any time.

Another feature, called automatic software download, enables network administrators to easily upgrade the EX2300 using the DHCP message exchange process to download and install software packages. Users simply configure the automatic software download feature on EX2300 switches acting as DHCP clients and establish a path to the server where the software package file is installed. The server then communicates the path to the software package file through DHCP server messages.

The ZTP feature allows a DHCP server to push configuration details and software images to multiple switches at boot-up time.

Campus Fabric Deployments

Juniper campus fabrics support these validated architectures with the EX2300 switch playing the role of access switch in a Virtual Chassis:

- **EVPN multihoming (collapsed core or distribution)**: A collapsed core architecture combines the core and distribution layers into a single switch, turning the traditional three-tier hierarchal network into a two-tier network. This eliminates the need for STP across the campus network by providing multihoming capabilities from the access to the core layer. EVPN multihoming can be deployed and managed using the Juniper Mist cloud.
- **Core-Distribution**: A pair of interconnected EX Series core or distribution switches provide L2 EVPN and L3 VXLAN gateway support. The EVPN-VXLAN network between the distribution and core layers offers two modes: centrally or edge routed bridging overlay.

In all these EVPN-VXLAN deployment modes, EX2300 switches can be used in Virtual Chassis configurations.
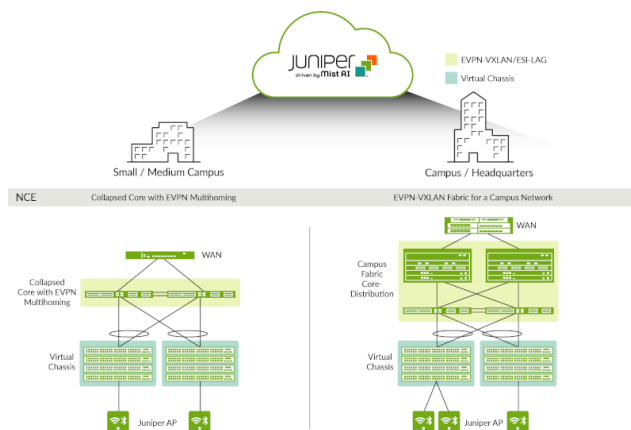

Figure 4: Campus fabrics showing Virtual Chassis and EVPN-VXLAN-based architectures

Features and Benefits

Managing AI-Driven Campus Fabric with the Juniper Mist Cloud

Juniper Mist Wired Assurance brings cloud management and Mist AI to campus fabric. It sets a new standard moving away from traditional network management towards AI-driven operations, while delivering better experiences to connected devices. The Juniper Mist Cloud streamlines deployment and management of campus fabric architectures by allowing:

- Automated deployment and zero touch deployment
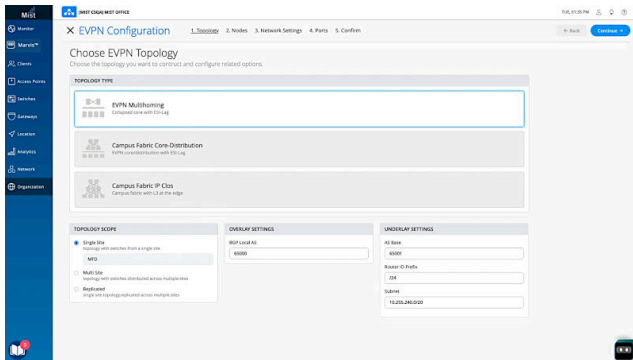- Anomaly detection
- Root cause analysis

Figure 5. EVPN multihoming configuration via the Juniper Mist cloud

High Availability Features

To avoid the complexities of the Spanning Tree Protocol (STP) without sacrificing network resiliency, the EX2300 employs a redundant trunk group (RTG) to provide the necessary port redundancy and simplify switch configuration. It also supports cross-member link aggregation, which allows redundant link aggregation connections between devices in a single Virtual Chassis configuration, providing an additional level of reliability and availability.

Junos Operating System

The EX2300 switches run the same Junos OS that is used by other Juniper Networks EX Series Ethernet Switches, QFX Series Switches, Juniper Routers, Juniper SRX Firewalls, and the Juniper NFX Series Network Services Platform. By utilizing a common operating system, Juniper delivers a consistent implementation and operation of control plane features across all products. To maintain that consistency, the Junos OS adheres to a highly disciplined development process that uses a single source code, and it employs a highly available modular architecture that prevents 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. Customers can deploy the software with complete confidence that all existing capabilities are maintained and operate in the same way.

Converged Environments

The EX2300 provides the highest levels of flexibility and features in its class for the most demanding converged data, voice, and video environments, delivering a reliable platform for unifying enterprise communications.

By providing a full 15.4 watts of Class 3 PoE to VoIP telephones, closed-circuit security cameras, wireless access points, and other IP-enabled devices, the EX2300 delivers a future-proofed solution for converging disparate networks onto a single IP infrastructure. The EX2300 PoE switches also support 802.3at standards-based PoE+, delivering 30 watts for powering networked devices such as IEEE 802.11ac wireless access points, and videophones that might require more power than available with IEEE 802.3af.

To ease deployment, the EX2300 supports the industrystandard Link Layer Discovery Protocol (LLDP) and LLDPMedia Endpoint Discovery (LLDP-MED) protocol, enabling the switches to automatically discover Ethernet-enabled devices, determine their power requirements, and assign virtual LAN (VLAN) membership. LLDP-MED-based granular PoE management allows the EX2300 to negotiate PoE usage down to a fraction of a watt on powered devices, enabling more efficient PoE utilization across the switch.

In addition, the EX2300 supports rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support eight class-of-service (CoS) queues on every port, enabling them to maintain multilevel, end-to-end traffic prioritizations. The EX2300 also supports a wide range of policy options, including strict priority, low latency, weighted random early detection (WRED), and shaped-deficit weighted roundrobin (SDWRR) queuing.

Security

Working as an enforcement point in Access Policy Infrastructure, the EX2300 provides both standards-based 802.1X portlevel access control for multiple devices per port, as well as Layer 2-4 policy enforcement based on user identity, location, device, or a combination of these. A user's identity, device type, machine posture check, and location can be used to determine whether access should be granted and for how long. If access is granted, the switch provides access to the network based on authorization attributes sent by the authentication server. The switch can also apply security policies, QoS policies, or both, or it can mirror user traffic to a central location for logging, monitoring, or threat detection by intrusion prevention systems.

The EX2300 also provides a full complement of integrated port security and threat detection features, including Dynamic Host Configuration Protocol (DHCP) snooping, dynamic ARP inspection (DAI), and media access control (MAC) limiting to defend against internal and external spoofing, and man-in-themiddle and denial of service (DoS) attacks.

Flex Licensing

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

Flex licensing is offered in Standard, Advanced, and Premium tiers. Standard tier features are available with the Junos OS image that ships with EX Series switches. Additional features can be unlocked with the purchase of a Flex Advanced or Flex Premium license.

The Flex Advanced and Premium licenses for the 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.

The EX2300 switches support both subscription and perpetual Flex licenses. Subscription licenses are offered for three- and five-year terms. In addition to Junos features, the Flex Advanced and Premium subscription licenses include Juniper Mist Wired Assurance. Flex Advanced and Premium subscription licenses also allow portability across the same tier and class of switches, ensuring investment protection for the customer.

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

Enhanced Limited Lifetime Warranty

The EX2300 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/

EX2300-24T/24P

EX2300-48T/48P

EX2300-24MP

EX2300-48MP

Physical Specifications

Power Options

Model	Max. System Power Consumption (Input Power without PoE)	Total PoE Power Budget
EX2300-24T	55 W AC	0
EX2300-24P	80 W AC	370 W
EX2300-24MP	55 W AC	380 W
EX2300-48T	70 W AC	0
EX2300-48P	100 W AC	750 W
EX2300-48MP	90 W AC	750 W

Dimensions (W x H x D)

- Width:
    - 17.4 in (44.19 cm) for desktop installations
    - 17.5 in (44.6 cm) with rack-mount brackets
- Height: 1.75 in (4.45 cm) for 1U installations
- Depth:
    - EX2300-24T: 10.2 in (25.9 cm)
    - EX2300-24P: 12.2 in (30.98 cm)
    - EX2300-24MP: 10 in (25.4 cm)
    - EX2300-48T: 10.2 in (25.9 cm)
    - EX2300-48P: 12.2 in (30.98 cm)
    - EX2300-48MP: 14.5 in (36.83 cm)

Backplane

- 80 Gbps Virtual Chassis interconnect to link up to four switches as a single logical device (EX2300-24/48T/P and EX2300-24/48 MP models)

System Weight

- EX2300-24T: 7.25 lb (3.29 kg)
- EX2300-24P: 9.89 lb (4.49 kg)
- EX2300-24MP: 8.82 lb (4 kg)
- EX2300-48T: 8.29 lb (3.76 kg)
- EX2300-48P: 11.07 lb (5.02 kg)
- EX2300-48MP: 14.33 lb (6.5 kg)

Environmental Ranges

- Operating temperature: 32° to 113° F (0° to 45° C)
- Storage temperature: -40° to 158° F (-40° to 70° C)
- Operating altitude: up to 13,000 ft (3962 m) at 40° C according to GR-63
- Non-operating altitude: up to 15,000 ft (4572 m)
- Relative humidity operating: 10% to 85% (noncondensing)
- Relative humidity non-operating: 0% to 95% (noncondensing)

Cooling

- Airflow:
    - EX2300-24T: 25 cfm
    - EX2300-24P: 23 cfm
    - EX2300-48T: 24 cfm
    - EX2300-48P: 25 cfm

Hardware Specifications

Switching Engine Model

- Store and forward

DRAM

- 2 GB (EX2300-24/48T/P)

Flash

- 2 GB (EX2300 non-multigigabit models)
- 8 GB (EX2300-24MP, EX2300-48MP)

CPU

- 1.25GHz ARM CPU

GbE Port Density per System

- EX2300-24P/24T/24MP: 28 (24 host ports + four-port SFP/SFP+ uplinks)
- EX2300-48P/48T: 52 (48 host ports + four-port SFP/SFP+ uplinks)
- EX2300-48MP: 54 (48 host ports + six-port SFP/SFP+ uplinks)

Supported Optics

- 10/100/1000BASE-T connector type RJ-45
- GbE SFP optic/connector type: RJ-45, or LC SFP fiber supporting 1000BASE-T SFP, SX (multimode), LX (singlemode), or LH (single-mode)

Physical Layer

- Physical port redundancy: Redundant trunk group (RTG)
- Cable diagnostics for detecting cable breaks and shorts
- Auto MDI/MDIX (medium-dependent interface/mediumdependent interface crossover) 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)

- EX2300-24P/24T: 64 Gbps (unidirectional)/128 Gbps (bidirectional)
- EX2300-24MP: 76 Gbps (unidirectional)/ 152 Gbps (bidirectional)

- EX2300-48P/48T: 88 Gbps (unidirectional)/176 Gbps (bidirectional)
- EX2300-48MP: 132 Gbps (unidirectional)/264 Gbps (bidirectional)

Software Specifications

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

- EX2300-24P/24T/24MP: 95 Mpps (wire speed)
- EX2300-48P/48T/48MP: 130 Mpps (wire speed)

Layer 2 Features

- Maximum MAC addresses in hardware: 16,000
- Jumbo frames: 9216 bytes
- Number of VLANs supported: 4093 (2044 active VLAN)
- Range of possible VLAN IDs: 1-4094
- Port-based VLAN
- MAC-based VLAN
- Voice VLAN
- Layer 2 Protocol Tunneling (L2PT)
- IEEE 802.1ak: Multiple VLAN Registration Protocol (MVRP)
- Compatible with Per-VLAN Spanning Tree Plus (PVST+)
- RVI (Routed VLAN Interface)
- IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)
- LLDP-MED with VoIP integration
- IEEE 802.1ad Q-in-Q tunneling
- IEEE 802.1br: Bridge Port Extension
- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1p: CoS Prioritization
- IEEE 802.1Q: VLAN Tagging
- IEEE 802.1Q-in-Q: VLAN Stacking
- IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)
- Number of MST instances supported: 64
- Number of VSTP instances supported: 253
- IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1X: Port Access Control
- IEEE 802.3: 10BASE-T
- IEEE 802.3u: 100BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3af: PoE
- IEEE 802.3at: PoE+
- IEEE 802.3ad: Link Aggregation Control Protocol (LACP)
- IEEE 802.3x: Pause Frames/Flow Control
- IEEE 802.3az: Energy Efficient Ethernet

Layer 3 Features: IPv4

- Maximum number of ARP entries: 1,500
- Maximum number of IPv4 unicast routes in hardware: 512 prefixes; 4,096 host routes
- Maximum number of IPv4 multicast routes in hardware: 2,048 groups; 2,048 multicast routes
- Routing Protocols: RIP v1/v2, OSPF v1/v2
- Static routing
- Routing policy
- Bidirectional Forwarding Detection (BFD) with slow timers (> 3 sec)
- IP directed broadcast

Layer 3 Features: IPv6

- Maximum number of Neighbor Discovery (ND) entries: 1,500
- Maximum number of IPv6 unicast routes in hardware: 512 prefixes; 2,048 host routes
- Maximum number of IPv6 multicast routes in hardware: 1,024 groups; 1,024 multicast routes
- Neighbor discovery, system logging, Telnet, SSH, SNMP, Network Time Protocol (NTP), Domain Name System (DNS)
- Static routing
- Routing protocols: RIPng, OSPF v3, Multicast Listener Discovery, Multicast Listener Discovery v2

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

- Port-based ACL (PACL)—256 ingress; 256 egress
- VLAN-based ACL (VACL)— 256 ingress; 256 egress
- Router-based ACL (RACL)—256 ingress; 512 egress
- ACL entries (ACE) in hardware per system: 2,000
- 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

- MAC limiting
- Allowed MAC addresses—configurable per port
- Sticky MAC (persistent MAC address learning)
- Dynamic ARP inspection (DAI)
- Proxy ARP
- Static ARP support
- DHCP snooping
- 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 EAP types: Message Digest 5 (MD5), Transport Layer Security (TLS), Tunneled Transport Layer Security (TTLS), Protected Extensible Authentication Protocol (PEAP)
- IPv6 RA Guard
- IPv6 Neighbor Discovery Inspection
- Captive Portal
- Static MAC authentication
- MAC-RADIUS
- Control plane DoS protection
- Fallback authentication
- Trusted Network Connect (TNC) certified

High Availability

- Link aggregation
- 802.3ad (LACP) support:
    - Number of LAGs supported: 128
    - Maximum number of ports per LAG: 8
- Tagged ports support in LAG
- Uplink Failure Detection

Quality of Service (QoS)

- Layer 2 QoS
- Layer 3 QoS
- Ingress policing: one-rate two-color; two-rate three-color markers
- Hardware queues per port: 8
- Scheduling methods (egress): Strict Priority (SP), shapeddeficit weighted round-robin (SDWRR)
- 802.1p, 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
- Congestion avoidance capabilities: Tail drop and WRED

Multicast

- IGMP snooping entries: 2,000
- IGMP: v1, v2, v3
- IGMP snooping
- PIM-SM, PIM-SSM, PIM-DM
- MLD snooping

Management and Analytics Platforms

- Juniper Mist Wired Assurance for Campus
- Junos Space® Network Director for Campus
- Junos Space® Management

Device Management and Operations

- Junos OS CLI
- Junos Web interface (J-Web)
- Out-of-band management: Serial, 10/100BASE-T Ethernet
- ASCII configuration
- Rescue configuration
- Configuration rollback
- Image rollback
- Simple Network Management Protocol (SNMP): v1, v2c, v3
- Remote monitoring (RMON) (RFC 2819) Groups 1, 2, 3, 9
- Network Time Protocol (NTP)
- DHCP server
- DHCP client and DHCP proxy
- DHCP relay and helper
- RADIUS authentication
- TACACS+ authentication
- SSHv2
- Secure copy
- HTTP/HTTPs
- DNS resolver
- System log logging
- Temperature sensor
- Configuration backup via FTP/secure copy
- Interface range

Supported RFCs

- RFC 768 UDP
- RFC 783 Trivial File Transfer Protocol (TFTP)
- RFC 791 IP
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 Telnet client and server
- RFC 894 IP over Ethernet
- RFC 903 Reverse ARP (RARP)
- RFC 906 Bootstrap Loading using TFTP
- RFC 951, 1542 BootP
- RFC 1027 Proxy ARP
- RFC 1058 RIP v1
- RFC 1122 Requirements for Internet Hosts
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1492 TACACS+
- RFC 1519 Classless Interdomain Routing (CIDR)
- RFC 1591 Domain Name System (DNS)
- RFC 1812 Requirements for IP Version 4 routers
- RFC 2030 Simple Network Time Protocol (SNTP)
- RFC 2068 HTTP/1.1
- RFC 2131 BOOTP/DHCP relay agent and DHCP server

- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 2267 Network Ingress Filtering
- RFC 2453 RIP v2
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2710 Multicast Listener Discovery Version (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3176 sFlow
- RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X
- RFC 5176 Dynamic Authorization Extensions to RADIUS
- LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA1057, draft 08

Supported MIBs

- RFC 1155 Structure of Management Information (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 1724 RIPv2 MIB
- RFC 1905 RFC 1907 SNMP v2c, SMIv2 and Revised MIB-II
- RFC 1981 Path MTU Discovery for IPv6
- RFC 2011 SNMPv2 Management Information Base for the IP using SMIv2
- RFC 2012 SNMPv2 Management Information Base for the Transmission Control Protocol using SMIv2
- RFC 2013 SNMPv2 Management Information Base for the User Datagram Protocol using SMIv2
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2287 System Application Packages MIB
- RFC 2460 IPv6 Specification
- RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
- RFC 2570-2575 SNMPv3, User-based Security, Encryption, and Authentication
- RFC 2576 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP Textual Conventions for SMIv2
- RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
- RFC 2819 RMON MIB

- RFC 2863 The Interfaces Group MIB
- RFC 2922 LLDP MIB
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3413 SNMP Application MIB
- RFC 3414 User-based Security Model for SNMPv3
- RFC 3415 View-based Access Control Model (VACM) for SNMP
- RFC 3484 Default Address Selection for IPv6
- RFC 3621 PoE-MIB (PoE switches only)
- RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
- RFC 4188 STP and Extensions MIB
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4291 IPv6 Addressing Architecture
- RFC 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and VLAN Extensions
- RFC 4443 ICMPv6 for the IPv6 Specification
- RFC 4861 Neighbor Discovery for IPv6
- RFC 4862 IPv6 Stateless Address Autoconfiguration
- Draft – blumenthal – aes – usm - 08
- Draft – reeder - snmpv3 – usm - 3desede -00

Troubleshooting

- Debugging: CLI via console, telnet, or SSH
- Diagnostics: Show and debug command statistics
- Traffic mirroring (port)
- Traffic mirroring (VLAN)
- 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
- Encapsulated Remote Switched Port Analyzer (ERSPAN)
- IP tools: Extended ping and trace
- Juniper Networks commit and rollback

Safety Certifications

- UL-UL60950-1 (Second Edition)
- C-UL to CAN/CSA 22.2 No.60950-1 (Second Edition)
- TUV/GS to EN 60950-1 (Second Edition)
- CB-IEC60950-1 (Second Edition with all country deviations)
- EN 60825-1 (Second Edition)

Electromagnetic Compatibility Certifications

- FCC 47CFR Part 15 Class A
- EN 55022 Class A
- ICES-003 Class A
- VCCI Class A
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- EN 55024
- EN 300386
- CE

Telecom Quality Management

- TL9000

Environmental

- Reduction of Hazardous Substances (ROHS) 6

Telco

- CLEI code

Noise Specifications

Noise measurements based on operational tests taken from bystander position (front) and performed at 25° C in compliance with ISO 7779. The PoE load was 370 W (24 ports powered at 15.4W each) on the EX2300-24P and 740 W (48 ports powered at 15.4W each) on the EX2300-48P.

Model	Acoustic Noise in DB
EX2300-24T	34.2
EX2300-24P	40.6
EX2300-48T	34.6
EX2300-48P	51.4
EX2300-24MP	45.7
EX2300-48MP	45.8

Warranty

- Enhanced limited lifetime switch hardware warranty

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

Product Number	Description
Switches	
EX2300-24T	EX2300 24-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-24T-VC	EX2300 24-port non-PoE+ w/ Virtual Chassis License
EX2300-24P	EX2300 24-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-24P-VC	EX2300 24-port PoE+ w/ Virtual Chassis License
EX2300-24MP	EX2300 16-port 10/100/1000BASE-T PoE+, 8-port 10/100/1000/2500BASE-T PoE+, 4 x 1/10GbE SFP/ SFP+ (optics sold separately)
EX2300-24T-DC	EX2300 24-port 10/100/1000BASE-T with internal DC PSU, 4 x 1/10GbE SFP/SFP+ (optics sold separately
EX2300-24T-TAA	EX2300 TAA 24-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+ (optics sold separately
EX2300-24P-TAA	EX2300 TAA 24-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-48T	EX2300 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-48T-VC	EX2300 48-port non-PoE+ w/ Virtual Chassis License
EX2300-48P	EX2300 48-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-48P-VC	EX2300 48-port PoE+ w/ Virtual Chassis License
EX2300-48MP	EX2300 32-port 10/100/1000BASE-T PoE+, 16-port 10/100/1000/2500BASE-T PoE+, 6 x 1/10GbE SFP/ SFP+ (optics sold separately)
EX2300-48T-TAA	EX2300 TAA 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
EX2300-48P-TAA	EX2300 TAA 48-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+ (optics sold separately)
Accessories	
EX-RMK	Rack-mount kit for EX2300
EX-4PST-RMK	Adjustable 4-post rack-mount kit for EX2300
EX-WMK	Wall-mount kit for EX2300
Subscription Licenses	
S-EX-A-C2-3	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year
S-EX-A-C2-5	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 5 year
S-EX-A-C3-3	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 48-port switches, 5 year
S-EX-A-C2-3-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 5 year
S-EX-A-C3-3-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 48-port switches with SVC CORE support, 5 year

Product Number	Description
Perpetual Licenses	
EX2300-VC	EX2300 Virtual Chassis License for EX2300 24- 48-port switches
S-EX-A-C2-P	Software, EX Series Advanced license, Class 2 Perpetual license for 24 port switches
S-EX-A-C3-P	Software, EX Series Advanced license, Class 3 Perpetual License for 48-port switches
EX-24-EFL	Enhanced Feature License for EX2300 24-port switches
EX-48-EFL	Enhanced Feature License for EX2300 48-port switches
Pluggable Optics	
EX-SFP-1GE-T	SFP 10/100/1000BASE-T copper; RJ-45 connector; 100m reach on UTP
EX-SFP-1GE-SX	SFP 1000BASE-SX; LC connector; 850 nm; 550m reach on multimode fiber
EX-SFP-1GE-SX-ET	SFP 1000BASE-SX; LC connector; 850 nm; 550m reach on multimode fiber, extended temperature
EX-SFP-1GE-LX	SFP 1000BASE-LX; LC connector; 1310 nm; 10 km reach on single-mode fiber
EX-SFP-1GE-LH	SFP 1000BASE-LH; LC connector; 1550 nm; 70 km reach on single-mode fiber
EX-SFP-1GE-LX40K	SFP 1000BASE-LX; LC connector; 1310 nm; 40 km reach on single-mode fiber
EX-SFP-GE10KT13R14	SFP 1000BASE-BX; TX 1310 nm/RX 1490 nm for 10 km transmission on single-strand, single-mode fiber
EX-SFP-GE10KT13R15	SFP 1000BASE-BX; TX 1310 nm/RX 1550 nm for 10 km transmission on single-strand, single-mode fiber
EX-SFP-GE10KT14R13	SFP 1000BASE-BX; TX 1490 nm/RX 1310 nm for 10 km transmission on single-strand, single-mode fiber
EX-SFP-GE10KT15R13	SFP 1000BASE-BX; TX 1550 nm/RX 1310 nm for 10 km transmission on single-strand, single-mode fiber
EX-SFP-GE40KT13R15	SFP 1000BASE-BX; TX 1310 nm/RX 1550 nm for 40 km transmission on single-strand, single-mode fiber
EX-SFPGE80KCW1470	SFP Gigabit Ethernet CWDM, LC connector; 1470 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1490	SFP Gigabit Ethernet CWDM, LC connector; 1490 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1510	SFP Gigabit Ethernet CWDM, LC connector; 1510 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1530	SFP Gigabit Ethernet CWDM, LC connector; 1530 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1550	SFP Gigabit Ethernet CWDM, LC connector; 1550 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1570	SFP Gigabit Ethernet CWDM, LC connector; 1570 nm, 80 km reach on single-mode fiber

Product Number	Description
EX-SFPGE80KCW1590	SFP Gigabit Ethernet CWDM, LC connector; 1590 nm, 80 km reach on single-mode fiber
EX-SFPGE80KCW1610	SFP Gigabit Ethernet CWDM, LC connector; 1610 nm, 80 km reach on single-mode fiber
EX-SFP-10GE-USR	SFP+ 10 Gigabit Ethernet Ultra Short Reach Optics, 850 nm for 10m on OM1, 20m on OM2, 100m on OM3 multimode fiber
EX-SFP-10GE-SR	SFP+ 10GBASE-SR; LC connector; 850 nm; 300m reach on 50 microns multimode fiber; 33m on 62.5 microns multimode fiber
EX-SFP-10GE-LR	SFP+ 10GBASE-LR; LC connector; 1310 nm; 10 km reach on single-mode fiber
EX-SFP-10GE-ER	SFP+ 10GBASE-ER 10 Gigabit Ethernet Optics, 1550 nm for 40 km transmission on single-mode fiber
EX-SFP-10GE-ZR	SFP+ 10GBASE-ZR; LC connector; 1550nm; 80 km reach on single-mode fiber
EX-SFP-10GE-DAC1M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) – 1-meter length
EX-SFP-10GE-DAC3M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) – 3-meter length
EX-SFP-10GE-DAC5M	SFP+ 10 Gigabit Ethernet Direct Attach Copper (twinax copper cable) – 5-meter length

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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

JUNIPER NETWORKS | Driven by Experience™

EX3400 ETHERNET SWITCH

Product Overview

Juniper Networks EX3400 Ethernet Switch delivers a high-performance, flexible, and cost-effective solution for today's most demanding converged data, voice, and video enterprise access environments.
The EX3400 supports Juniper Networks Virtual Chassis technology, allowing up to 10 switches to be interconnected over uplink ports and managed as a single device, delivering a scalable, pay-as-you-grow solution for expanding network environments.
The EX3400 is onboarded, provisioned, and managed in the Juniper Mist Cloud Architecture. Mist Wired Assurance delivers better experiences for connected devices through AI-powered automation and service levels.

Product Description

The Juniper Networks® EX3400 Ethernet Switch with Juniper Networks Virtual Chassis technology provides enterprises with the flexibility and ease of management that previously was only available with higher-end access switches. The fixed-configuration EX3400 supports a number of key features, including:

- 24-port and 48-port models with and without Power over Ethernet (PoE/PoE+) are for campus wiring closet deployments.
- Cloud-ready and zero-touch provisioning (ZTP)-enabled for Juniper Mist Wired Assurance
- Data center-optimized cooling options offer both front-to-back and back-to-front airflows, making the EX3400 suitable for GbE data center access deployments.
- Two redundant, field-replaceable power supplies each provide up to 920 watts of power.
- 24-port data center models are included for metro deployments.
- Four dual-mode (GbE/10GbE) small form-factor pluggable transceiver (SFP/SFP+) uplink ports and two 40GbE QSFP+ ports are available.
- Uplink ports can be configured as Virtual Chassis interfaces and connected via standard 10GbE/40GbE optic interfaces (40GbE uplink ports are preconfigured by default as Virtual Chassis ports).
- Comprehensive Layer 2 functionality with RIP and static routing is provided.
- A compact, 13.8-inch deep 1 U form factor supports flexible deployment options.
- An easy-to-manage solution includes centralized software upgrades.
- Support is available for the same consistent modular Juniper Networks Junos operating system control plane feature implementation used by all other Juniper fixed-configuration Juniper Networks EX Series Ethernet Switches.
- Support is provided for Layer 3 (OSPF v2, IGMP v1/v2/v3, PIM, VRRP, BFD, virtual router) via an enhanced feature license (optional license required).
- Support is available for IPv6 management, including neighbor discovery, stateless auto configuration, telnet, SSH, DNS, system log, NTP, ping, traceroute, ACL, CoS static routing, and RIPng.
- IPv6 routing features (OSPFv3, virtual router support for unicast, VRRPv6, PIM, MLDv1/v2) are supported via an enhanced feature license.
- Support is available for Border Gateway Protocol (BGP), multiprotocol BGP (MBGP), and Intermediate System-to-Intermediate System (IS-IS) via an optional Advanced Feature license.
- Energy Efficient Ethernet (EEE) capability is provided.

[1]Software to come in future

Architecture and Key Components

Cloud Management with Juniper Mist Wired Assurance

Juniper Mist Wired Assurance, a cloud-based service driven by Mist AI to claim, configure, manage, and troubleshoot the EX3400, delivers AI-powered automation and service levels to ensure a better experience for connected devices. Wired Assurance leverages rich Junos switch telemetry data to simplify operations, reduce mean time to repair, and improve visibility. Wired Assurance offers the following features:

- **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 such as throughput, successful connects, and switch health with key pre- and post-connection metrics (see Figure 1). 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). And perform software upgrades easily through Juniper Mist cloud.
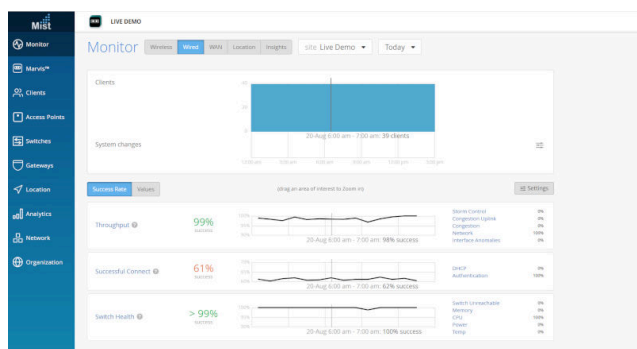

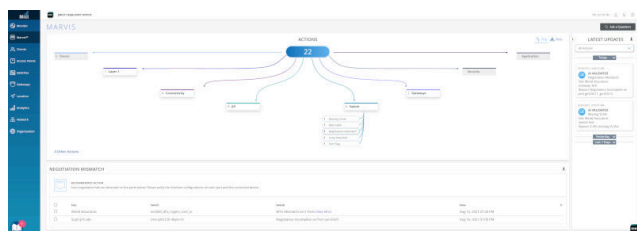*Figure 1: Juniper Mist Wired Assurance service-level expectations*

Figure 2: Marvis Actions for wired switches

The addition of Marvis, a complementary Virtual Network Assistant driven by Mist AI, lets you start building a self-driving network that simplifies network operations and streamlines troubleshooting via automatic fixes for EX Series switches or recommended actions for external systems.

For more information see Juniper Mist Wired Assurance.

Virtual Chassis Technology

The EX3400 supports Juniper Networks Virtual Chassis technology, allowing up to 10 switches to be interconnected over uplink ports and managed as a single logical device, delivering a scalable, pay-as-you-grow solution for expanding network environments.

When deployed in a Virtual Chassis configuration, the EX3400 switches elect a primary and backup switch based on a set of criteria or preconfigured policies. The primary switch automatically creates and updates the switching and optional routing tables on all switches in the Virtual Chassis configuration. Virtual Chassis technology allows switches to be added or removed without service disruption. An EX3400 Virtual Chassis configuration operates as a highly resilient unified system, providing simplified management using a single IP address, single telnet session, single command-line interface (CLI), automatic version checking, and automatic configuration. The EX3400 switches are also capable of local switching, so that packets coming into a port destined for another port on the same switch do not have to traverse the Virtual Chassis, increasing the forwarding capacity of the switch.

The EX3400 implements the same slot/module/port numbering schema as other Juniper Networks 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, simplifying overall system maintenance and management.

The two QSFP+ ports on the EX3400 switch can be configured as Virtual Chassis ports or as uplinks to aggregation devices.
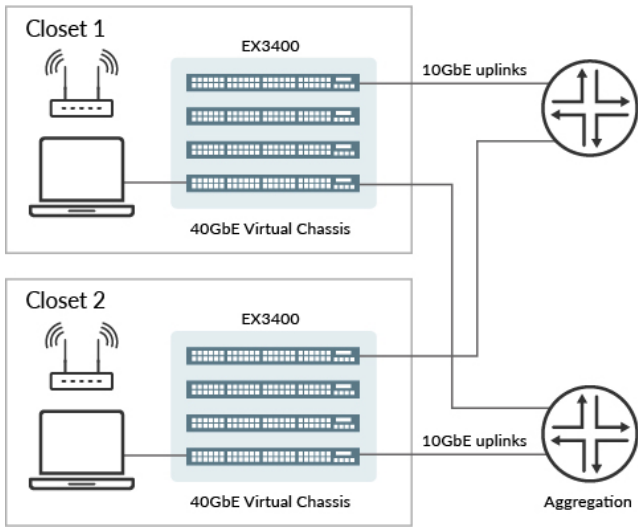
Figure 3: EX3400 Virtual Chassis deployments

Campus Fabric Deployments

Juniper campus fabrics support these validated architectures with the EX3400 switch playing the role of access switch:

- **EVPN multihoming (collapsed core or distribution)**: A collapsed core architecture combines the core and distribution layers into a single switch, turning the traditional three-tier hierarchal network into a two-tier network. This eliminates the need for STP across the campus network by providing multihoming capabilities from the access to the core layer. EVPN multihoming can be deployed and managed using the Juniper Mist cloud.
- **Core/distribution**: A pair of interconnected EX Series core or distribution switches provide L2 EVPN and L3 VXLAN gateway support. The EVPN-VXLAN network between the distribution and core layers offers two modes: centrally or edge routed bridging overlay.

In all these EVPN-VXLAN deployment modes, EX3400 switches can be used as an access layer switch.
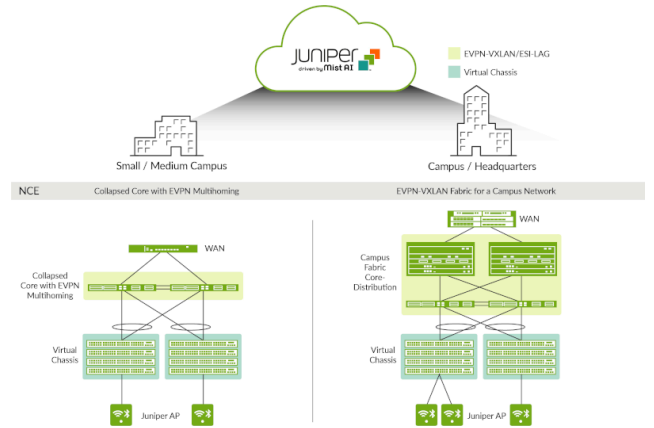

Figure 4: Campus fabrics showing Virtual Chassis and EVPN-VXLAN-based architectures

Features and Benefits

Managing AI-Driven Campus Fabric with the Juniper Mist Cloud

Juniper Mist Wired Assurance brings cloud management and Mist AI to campus fabric. It sets a new standard moving away from traditional network management towards AI-driven operations, while delivering better experiences to connected devices. The Juniper Mist Cloud streamlines deployment and management of campus fabric architectures by allowing:

- Automated deployment and zero touch deployment
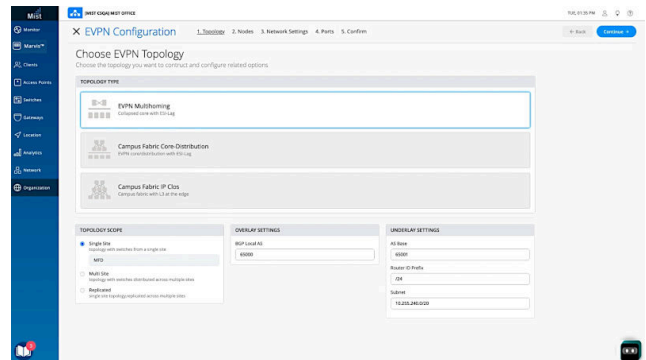- Anomaly detection
- Root cause analysis

Figure 5. EVPN multihoming configuration via the Juniper Mist cloud

Juniper Virtual Chassis

Virtual Chassis technology simplifies network management for smaller deployments. Up to 10 interconnected EX3400 switches can be managed as a single device utilizing a single Junos OS image and a single configuration file, reducing the overall number of units to monitor and manage. When the Junos OS is upgraded on the primary switch in an EX3400 Virtual Chassis configuration, the software is automatically upgraded on all other member switches at the same time.

In addition, a feature called system snapshot makes a copy of all software files used to run the switch, including the Junos operating system, the active configuration, and the rescue configuration. These copies can be used to reboot the switch the next time it is powered up or as a backup boot option. The Junos OS software can also be preinstalled on a flash drive and used to boot the EX3400 at any time.

Another feature, called automatic software download, enables network administrators to easily upgrade the EX3400 using the DHCP message exchange process to download and install software packages. Users simply configure the automatic software download feature on EX3400 switches acting as DHCP clients and establish a path to the server where the software package file is installed. The server then communicates the path to the software package file through DHCP server messages.

The ZTP feature allows a DHCP server to push configuration details and software images to multiple switches at boot-up time.

Power

The EX3400 supports the 802.3af Class 3 Power over Ethernet (PoE) and 802.3at PoE+ standards for supporting networked devices such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones in converged networks. While EX3400 switches ship with a single power supply by default, they can support redundant 600W or 920W power supplies that provide PoE (15.4W) or PoE+ (30W) power to all ports in the switch. Spare power supplies can be ordered as needed.

There are two PoE power mode settings on the EX3400 switches:

- Static mode allows customers to specify the maximum PoE power setting on an individual port.
- Class mode allows end devices to specify PoE class and negotiate whether the switch can provide PoE power to the device.

The EX3400 also supports the industry-standard Link Layer Discovery Protocol (LLDP) and LLDP-Media Endpoint Discovery (LLDP-MED), which enable the switches to automatically discover Ethernet-enabled devices, determine their power requirements, and assign virtual LAN (VLAN) parameters. LLDP-MED-based granular PoE management allows the EX3400 to negotiate PoE usage down to a fraction of a watt on powered devices, enabling more efficient PoE utilization across the switch.

The EX3400 supports the IEEE 802.3az standard for Energy Efficient Ethernet (EEE) functionality, reducing power consumption of copper physical layers during periods of low link utilization.

In addition, the EX3400 supports rich quality-of-service (QoS) functionality for prioritizing data, voice, and video traffic. The switches support 12 QoS queues (8 unicast and 4 multicast) on every port, enabling them to maintain multilevel, end-to-end traffic prioritization. The EX3400 also supports a wide range of scheduling options, such as priority and shaped-deficit weighted round-robin (SDWRR) scheduling.

Table 1. EX3400 PoE Power Budget

SKU	Total 10/100/1000BASE-T Ports	Total 30 W PoE+ Ports That Can Be Enabled	Total 15.4 W PoE Ports That Can Be Enabled	Power Supply Type	PoE+ Power Budget (W)
EX3400-24P	24	24 ports up to 30W	24 ports up to 15.4W	AC	370W/720W
EX3400-48P	48	48 ports up to 30W	48 ports up to 15.4W	AC	740W/1440W

Security

The EX3400 switches fully interoperate with Juniper Networks Access Policy Infrastructure, which consolidates all aspects of a user's identity, device, and location, enabling administrators to enforce access control and security down to the individual port or user levels. Working as an enforcement point in the Access Policy Infrastructure, the EX3400 provides both standards-based 802.1X port-level access control and Layer 2-4 policy enforcement based on user identity, location, device, or a combination of these. A user's identity, device type, machine posture check, and location can be used to not only grant or deny access but also to determine the duration of access. If access is granted, the switch assigns the user to a specific VLAN based on authorization levels. The switch can also apply QoS policies or mirror user traffic to a central location for logging, monitoring, or threat detection by an intrusion prevention system (IPS).

The EX3400 also provides a full complement of port security features, including Dynamic Host Configuration Protocol (DHCP) snooping, dynamic ARP inspection (DAI), and media access control (MAC) limiting to defend against internal and external spoofing, man-in-the-middle, and denial-of-service (DoS) attacks.

MACsec

EX3400 switches support IEEE 802.1ae MACsec, providing support for link-layer data confidentiality, data integrity, and data origin authentication. The MACsec feature enables the EX3400 to support 88 Gbps of near line-rate hardware-based traffic encryption on all GbE and 10GbE ports.

Defined by IEEE 802.1AE, MACsec provides secure, encrypted communication at the link layer that is capable of identifying and preventing threats from DoS and intrusion attacks, as well as man-in-the-middle, masquerading, passive wiretapping, and playback attacks launched from behind the firewall. When MACsec is deployed on switch ports, all traffic is encrypted on the wire but traffic inside the switch is not. This allows the switch to apply all network policies such as QoS, deep packet inspection, and sFlow to each packet without compromising the security of packets on the wire.

Hop-by-hop encryption enables MACsec to secure communications while maintaining network intelligence. In addition, Ethernet-based WAN networks can use MACsec to provide link security over long-haul connections. MACsec is transparent to Layer 3 and higher-layer protocols and is not limited to IP traffic—it works with any type of wired or wireless traffic carried over Ethernet links.

Junos Operating System

The EX3400 switches run the same Junos OS that is used by other Juniper Networks EX Series Ethernet Switches, QFX Series Switches, Juniper Routers, Juniper SRX Firewalls, and the Juniper NFX Series Network Services Platform. 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 that prevents isolated failures from bringing an entire system down.

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

Converged Environments

The EX3400 switches provide a flexible solution for demanding converged data, voice, and video environments. The EX3400-24P and EX3400-48P support PoE+, delivering up to 30 watts of power per port to support networked devices such as telephones, video cameras, IEEE 802.11ac wireless LAN (WLAN) access points, and videophones. The PoE+ standard provides nearly double the 15.4 watts per port available with the IEEE 802.3af PoE standard.

Product Options

Table 2. EX3400 Ethernet Switch Models

SKU	Total 10/100/1000 BASE-T Ports	Uplinks	Airflow	Power Supply Type	PoE+ Power (Budget W)	Max. System Power Consumption (W)*	Power Supply Rating (W)
EX3400-24T	24		Front-to-back	AC	0	100	150W
EX3400-48T	48		Front-to-back	AC	0	120	150W
EX3400-48T-AFI	48		Back-to-front	AC	0	120	150W
EX3400-24P	24 PoE+	10GbE/GbE SFP+/SFP ports 2 40GbE QSFP+ ports	Front-to-back	AC	370W²/720W³	110	600W
EX3400-48P	48 PoE+		Front-to-back	AC	740W²/1440W³	120	920W
EX3400-24T-DC	24		Front-to-back	DC	0	100	150W
EX3400-48T-DC	48		Front-to-back	DC	0	120	150W

² 1 power supply
³ 2 power supplies
* Input power without PoE

High Availability

The EX3400 line of Ethernet switches is designed to support many of the same failover capabilities and high availability (HA) functionality as other Juniper EX access switches with Virtual Chassis technology.

Each EX3400 switch is capable of functioning as a Routing Engine (RE) when deployed in a Virtual Chassis configuration. When two or more EX3400 switches are interconnected in a Virtual Chassis configuration, all member switches share a single control plane. Junos OS automatically initiates an election process to assign a primary (active) and backup (hot-standby) Routing Engine. An integrated Layer 2 and Layer 3 graceful Routing Engine switchover (GRES) feature maintains uninterrupted access to applications, services, and IP communications in the unlikely event of a primary Routing Engine 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 take on the backup Routing Engine position should the designated primary fail. Primary, backup, and line card priority status can be assigned by the network operations team to dictate the order of ascension. This N+1 Routing Engine redundancy—coupled with GRES, the nonstop routing (NSR), and, in the future, the nonstop bridging (NSB) capabilities of Junos OS— ensures a smooth transfer of control plane functions following unexpected failures.

The EX3400 also supports the following HA features:

- **Redundant trunk group**—To avoid the complexities of Spanning Tree Protocol (STP) without sacrificing network resiliency, the EX3400 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.
- **Nonstop bridging (NSB) and nonstop active routing (NSR)**— NSB and NSR on the EX3400 switch ensure control plane protocols, states, and tables are synchronized between primary and backup REs to prevent protocol flaps or convergence issues following a Routing Engine failover.
- **Nonstop software upgrade (NSSU)**—With NSSU, all members of an EX3400 Virtual Chassis configuration can be upgraded with a single command. Mission-critical traffic can be configured as a link aggregate across multiple Virtual Chassis switch members, ensuring minimal disruption during the upgrade process.

Flex Licensing

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

Flex licensing is offered in Standard, Advanced, and Premium tiers. Standard tier features are available with the Junos OS image that ships with EX Series switches. Additional features can be unlocked with the purchase of a Flex Advanced or Flex Premium license.

The Flex Advanced and Premium licenses for the 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.

The EX3400 switches support both subscription and perpetual Flex licenses. Subscription licenses are offered for three- and five-year terms. In addition to Junos features, the Flex Advanced and Premium subscription licenses include Juniper Mist Wired Assurance. Flex Advanced and Premium subscription licenses also allow portability across the same tier and class of switches, ensuring investment protection for the customer.

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

Enhanced Limited Lifetime Warranty

The EX3400 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/

EX3400-24T/P

EX3400-48T/P

Physical Specifications

Dimensions (W x H x D)

- Base unit: 17.36 x 1.72 x 13.78 in (44.1 x 4.37 x 35 cm)
- With power supply installed: 17.36 x 1.72 x 15.05 in (44.1 x 4.37 x 38.24 cm)
- With power supply and front module installed: 17.36 x 1.72 x 15.19 in (44.1 x 4.37 x 38.58 cm)

Backplane

- 160 Gbps (with QSFP+ ports) or 80 Gbps (with SFP+ ports) Virtual Chassis interconnect to link up to 10 switches as a single logical device

Uplink

- Fixed 4-port uplinks can be individually configured as GbE (SFP) or 10GbE (SFP+) ports; 2 x 40G QSFP+ ports.

System Weight

- EX3400 switch (no power supply or fan module): 10.49 lb (4.76 kg) maximum
- EX3400 switch (with single power supply and two fan modules): 12.65 lb (5.74 kg) maximum
- 150 W AC power supply: 1.43 lb (0.65 kg)
- 600 W AC power supply: 1.82 lb (0.83 kg)
- 920 W AC power supply: 1.87 lb (0.85 kg)
- 150 W DC power supply: 1.43 lb (0.65 kg)
- Fan module: 0.16 lb (0.07 kg)

Environmental Ranges

- Operating temperature: 32° to 113° F (0° to 45° C)
- Storage temperature: -40° to 158° F (-40° to 70° C)
- Operating altitude: up to 10,000 ft (3048 m)
- Nonoperating altitude: up to 16,000 ft (4877 m)
- Relative humidity operating: 10% to 85% (noncondensing)
- Relative humidity nonoperating: 0% to 95% (noncondensing)

Hardware Specifications

Switching Engine Model

- Store and forward

DRAM

- 2 GB with ECC

Flash

- 2 GB

CPU

- Dual Core 1 GHz

GbE Port Density per System

- EX3400-24T/EX3400-24P/EX3400-24T-DC: 30 (24 host ports + four 1/10 GbE and two 40GbE uplink ports)
- EX3400-48T/EX3400-48T-AFI/EX3400-48P/EX3400-48T-DC: 54 (48 host ports + four 1/10 GbE and two 40GbE uplink ports)

Physical Layer

- Cable diagnostics 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)

- EX3400-24T, EX3400-24P, EX3400-24T-DC: 144 Gbps (unidirectional)/288 Gbps (bidirectional)
- EX3400-48T, EX3400-48T-AFI, EX3400-48P, EX3400-48T-DC: 168 Gbps (unidirectional)/336 Gbps (bidirectional)

Software Specifications

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

- 24P/24T/24T-DC: 214 Mpps
- 48P/48T/48T-BF/48T-DC: 250 Mpps

Layer 2 Features

- Maximum MAC addresses per system: 32,000
- Jumbo frames: 9216 bytes
- Number of VLANs supported: 4,096
- Range of possible VLAN IDs: 1-4094
- Port-based VLAN
- MAC-based VLAN
- Voice VLAN
- Layer 2 Protocol Tunneling (L2PT)
- Compatible with Per-VLAN Spanning Tree Plus (PVST+)
- RVI (routed VLAN interface)
- Persistent MAC (sticky MAC)
- RSTP and VSTP running concurrently
- IEEE 802.1AB: Link Layer Discovery Protocol (LLDP)
- LLDP-MED with VoIP integration
- IEEE 802.1ae Media Access Control Security (MACsec)
- IEEE 802.1ak Multiple VLAN Registration Protocol (MVRP)
- IEEE 802.1br: Bridge Port Extension
- IEEE 802.1D: Spanning Tree Protocol
- IEEE 802.1p: CoS prioritization
- IEEE 802.1Q-in-Q: VLAN stacking
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1s: Multiple Spanning Tree Protocol (MSTP)
- Number of MST instances supported: 64
- Number of VSTP instances supported: 510
- IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)
- IEEE 802.1X: Port access control
- IEEE 802.3: 10BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3ad: Link Aggregation Control Protocol (LACP)
- IEEE 802.1ad Q-in-Q tunneling
- IEEE 802.3ae: 10-Gigabit Ethernet
- IEEE 802.3af: PoE
- IEEE 802.3at: PoE+
- IEEE 802.3u: 100BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3x: Pause Frames/Flow Control

- Layer 3 VLAN-tagged subinterface
- PVLAN support
- Multicast VLAN routing
- Adding/removing single tag
- Filter-based SVLAN tagging
- Flexible CoS (outer .1P marking)

Layer 3 Features: IPv4

- Maximum number of ARP entries: 16,000
- Maximum number of IPv4 unicast routes in hardware: 14,000 prefixes; 36,000 host routes
- Maximum number of IPv4 multicast routes in hardware: 18,000 groups; 4,000 multicast routes
- Routing Protocols: RIP v1/v2, OSPF v2
- Static routing
- Layer 3 redundancy: VRRP
- IP directed broadcast—traffic forwarding
- Virtual router (VRF-Lite) supporting RIP, OSPF
- Routing policy
- Filter-based forwarding (FBF)
- Unicast reverse-path forwarding

Layer 3 Features: IPv6

- Maximum number of Neighbor Discovery entries: 8,000
- Maximum number of IPv6 unicast routes in hardware: 3,500 prefixes; 18,000 host routes
- Maximum number of IPv6 multicast routes in hardware: 9,000 groups; 2,000 multicast routes
- Neighbor discovery, system logging, Telnet, SSH, Junos Web, SNMP, Network Time Protocol (NTP), Domain Name System (DNS)
- Routing protocols: RIPng, OSPF v3
- Static routing
- IPv6 ACL (PACL, VACL, RACL)
- IPv6 CoS (BA, MF classification and rewrite, scheduling based on TC)
- MLDv1/v2 snooping
- IPv6 ping, traceroute
- IPv6 stateless auto-configuration
- IPv6 Layer 3 forwarding in hardware
- IPv6 Layer 3 redundancy: VRRP v6
- Virtual Router support for IPv6 unicast
- PIM for IPv6 multicast

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

- Port-based ACL (PACL)—ingress and egress
- VLAN-based ACL (VACL)—ingress and egress
- Router-based ACL (RACL)—ingress and egress
- ACL entries (ACE) in hardware per system: 1500
- 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
- Trusted Network Connect (TNC) certified
- Static MAC authentication
- MAC-RADIUS
- Control plane denial-of-service (DoS) protection
- Firewall filter on me0 interface (control plane protection)
- Captive portal—Layer 2 interfaces
- Fallback authentication
- Media Access Control Security (MACsec)

Access Security

- MAC limiting
- Allowed MAC addresses, configurable per port
- Dynamic ARP inspection (DAI)
- Proxy ARP
- Static ARP support
- DHCP snooping
- 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 access control list (ACL) based on RADIUS attributes
- 802.1X supported EAP types: MD5, Transport Layer Security (TLS), Tunneled Transport Layer Security (TTLS), Protected Extensible Authentication
- Protocol (PEAP)
- IPv6 RA Guard
- IPv6 Neighbor Discovery Inspection
- Media Access Control security (MACsec)

High Availability

- Link aggregation:
- 802.3ad (LACP) support
- Number of link aggregation groups (LAGs) supported: 128
- Maximum number of ports per LAG: 16
- Tagged ports support in LAG
- Graceful Route Engine switchover (GRES) for IGMP v1/v2/v3 snooping
- Nonstop routing (OSPF v1/v2/v3, RIP/RIPng, PIM)
- Nonstop software upgrade (NSSU)

Quality of Service (QoS)

- Layer 2 QoS
- Layer 3 QoS
- Ingress policing: two-rate three-color
- Hardware queues per port: 12 (8 unicast, 4 multicast)
- Scheduling methods (egress): Strict Priority (SP), SDWRR
- 802.1p, DiffServ code point (DSCP/IP) precedence trust and marking
- L2-L4 classification criteria, including Interface, MAC address, EtherType, 802.1p, VLAN, IP address, DSCP/IP precedence, and TCP/UDP port numbers
- Congestion avoidance capabilities: Tail drop

Multicast

- IGMP snooping entries: 1000
- IGMP snooping
- IGMP v1/v2/v3
- PIM SM, PIM SSM, PIM DM
- VRF-Lite support for PIM and IBMP
- MLD v1/v2 snooping
- IGMP filter
- Multicast Source Discovery Protocol (MSDP)
- PIM for IPv6 multicast

Management and Analytics Platforms

- Juniper Mist Wired Assurance for Campus
- Junos Space® Network Director for Campus
- Junos Space® Management

Device Management and Operations

- Junos OS CLI
- Junos Web interface (J-Web)
- Out-of-band management: Serial, 10/100BASE-T Ethernet
- ASCII configuration
- Rescue configuration
- Configuration rollback
- Image rollback
- Real-time performance monitoring (RPM)
- SNMP: v1, v2c, v3
- Remote monitoring (RMON) (RFC 2819) Groups 1, 2, 3, 9
- Network Time Protocol (NTP)
- DHCP server
- DHCP client and DHCP proxy
- DHCP relay and helper
- VR-aware DHCP
- RADIUS authentication
- TACACS+ authentication
- SSHv2
- Secure copy

- HTTP/HTTPs
- DNS resolver
- System logging
- Temperature sensor
- Configuration backup via FTP/secure copy
- sFlow
- Interface range
- Port profile associations
- Uplink failure detection
- Zero Touch Provisioning using DHCP

Supported RFCs

- RFC 768 UDP
- RFC 783 Trivial File Transfer Protocol (TFTP)
- RFC 791 IP
- RFC 792 Internet Control Message Protocol (ICMP)
- RFC 793 TCP
- RFC 826 Address Resolution Protocol (ARP)
- RFC 854 Telnet client and server
- RFC 894 IP over Ethernet
- RFC 903 Reverse ARP (RARP)
- RFC 906 Bootstrap Loading using TFTP
- RFC 951, 1542 BootP
- LLDP-MED, ANSI/TIA-1057, draft 08
- RFC 1027 Proxy ARP
- RFC 1058 RIP v1
- RFC 1122 Host requirements
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1492 TACACS+
- RFC 1519 Classless Interdomain Routing (CIDR)
- RFC 1591 Domain Name System (DNS)
- RFC 1812 Requirements for IP Version 4 routers
- RFC 2030 Simple Network Time Protocol (SNTP)
- RFC 2068 HTTP/1.1
- RFC 2131 BootP/DHCP relay agent and DHCP server
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 2267 Network Ingress Filtering
- RFC 2328 OSPF v2
- RFC 2453 RIP v2
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2710 Multicast Listener Discovery Version (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- RFC 3569 PIM SSM

- RFC 3579 RADIUS Extensible Authentication Protocol (EAP) support for 802.1X
- RFC 3618 Multicast Source Discovery Protocol (MSDP)
- RFC 3768 VRRP
- RFC 3973 PIM DM
- RFC 4601 PIM SM
- RFC 5176 Dynamic Authorization Extensions to RADIUS

Supported MIBs

- RFC 1155 Structure of Management Information (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 1724 RIPv2 MIB
- RFC 1905 RFC 1907 SNMP v2c, SMIv2, and Revised MIB-II
- RFC 1981 Path MTU Discovery for IPv6
- RFC 2011 SNMPv2 Management Information Base for the IP using SMIv2
- RFC 2012 SNMPv2 Management Information Base for the Transmission Control Protocol using SMIv2
- RFC 2013 SNMPv2 Management Information Base for the User Datagram Protocol using SMIv2
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2287 System Application Packages MIB
- RFC 2328 OSPF v2
- RFC 2460 IPv6 Specification
- RFC 2464 Transmission of IPv6 Packets over Ethernet Networks
- RFC 2570-2575 SNMPv3, user-based security, encryption, and authentication
- RFC 2576 Coexistence between Version 1, Version 2, and Version 3 of the Internet-standard Network Management Framework
- RFC 2578 SNMP Structure of Management Information MIB
- RFC 2579 SNMP textual conventions for SMIv2
- RFC 2665 Definitions of Managed Objects for the Ethernet-like Interface Types
- RFC 2819 RMON MIB
- RFC 2863 Interface Group MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2922 LLDP MIB
- RFC 2925 Definitions of Managed Objects for Remote Ping/Traceroute, and Lookup Operations
- RFC 3413 SNMP application MIB
- RFC 3414 User-based Security Model for SNMPv3
- RFC 3415 View-based access control model (VACM) for SNMP

- RFC 3484 Default Address Selection for IPv6
- RFC 3621 PoE-MIB (PoE switches only)
- RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
- RFC 4188 STP and Extensions MIB
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4291 IPv6 Addressing Architecture
- RFC 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and VLAN Extensions
- RFC 4443 ICMPv6 for the IPv6 Specification
- RFC 4861 Neighbor Discovery for IPv6
- RFC 4862 IPv6 Stateless Address Autoconfiguration
- RFC 5643 OSPF v3 MIB Support
- IEEE 802.1ad Q-in-Q
- Draft – blumenthal – aes – usm - 08
- Draft – reeder - snmpv3 – usm - 3desede -00

Troubleshooting

- Debugging: CLI via console, telnet, or SSH
- Diagnostics: Show and debug command statistics
- Traffic mirroring (port)
- Traffic mirroring (VLAN)
- Filter-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
- Encapsulated Remote Switched Port Analyzer (ERSPAN)
- IP tools: Extended ping and trace
- Juniper Networks commit and rollback

Safety Certifications

- UL-UL60950-1 (Second Edition)
- C-UL to CAN/CSA 22.2 No.60950-1 (Second Edition)
- TUV/GS to EN 60950-1 (Second Edition), Amendment
- A1-A4, A11
- CB-IEC60950-1, (Second Edition with all country deviations)
- EN 60825-1 (Second Edition)

Electromagnetic Compatibility Certifications

- FCC 47CFR Part 15 Class A
- EN 55022 Class A
- ICES-003 Class A
- VCCI Class A
- AS/NZS CISPR 22 Class A
- CISPR 22 Class A
- EN 55024
- EN 300386

- CE

Telecom Quality Management

- TL9000

Environmental

- Reduction of Hazardous Substances (ROHS) 6

Telco

- CLEI code

Noise Specifications

- Noise measurements are based on operational tests taken from bystander position (front) and performed at 23° C in compliance with ISO 7779.

Table 3: Noise Test Results

Model	Acoustic Noise in DBA
EX3400-24T	36
EX3400-24P	37
EX3400-24T-DC	36
EX3400-48T/EX3400-48T-DC	35
EX3400-48T-AFI	39
EX3400-48P	46

Warranty

- Limited lifetime switch hardware warranty

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

Product Number	Description
Switches	
EX3400-24T	EX3400 24-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included)
EX3400-24P	EX3400 24-port 10/100/1000BASE-T (24 PoE+ ports) with 4 SFP+ and 2 QSFP+ uplink ports (optics not included)
EX3400-24T-DC	EX3400 24-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included) and DC power supply
EX3400-48T	EX3400 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-48T-AFI	EX3400 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, back-to-front airflow, 1 AC PSU JPSU-150-AC-AFI included (optics sold separately)
EX3400-48P	EX3400 48-port 10/100/1000BASE-T (48 PoE+ ports) with 4 SFP+ and 2 QSFP+ uplink ports (optics not included)
EX3400-48T-DC	EX3400 48-port 10/100/1000BASE-T with 4 SFP+ and 2 QSFP + uplink ports (optics not included) and DC power supply
EX3400-24T-TAA	EX3400 TAA 24-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-24P-TAA	EX3400 TAA 24-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-600-AC-AFO included (optics sold separately)
EX3400-48T-TAA	EX3400 TAA 48-port 10/100/1000BASE-T, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-150-AC-AFO included (optics sold separately)
EX3400-48P-TAA	EX3400 TAA 48-port 10/100/1000BASE-T PoE+, 4 x 1/10GbE SFP/SFP+, 2 x 40GbE QSFP+, redundant fans, front-to-back airflow, 1 AC PSU JPSU-920-AC-AFO included (optics sold separately)
Accessories	
EX-4PST-RMK	Adjustable 4-post rack-mount kit for EX2200, EX3200, EX3400, and EX4200
EX-RMK	Rack-mount kit for EX2200, EX3200, EX3400, and EX4200
EX-WMK	EX4200, EX3200, EX3400, and EX2200 wall-mount kit with baffle
CBL-EX-PWR-C13-AU	AC power cable, Australia (10 A/250V, 2.5m)
CBL-EX-PWR-C13-C14	AC power cable, patch cord (10 A/250V, 2.5 m) for EU only
CBL-EX-PWR-C13-CH	AC power cable, China (10 A/250V, 2.5m)
CBL-EX-PWR-C13-EU	AC power cable, Europe (10 A/250V, 2.5m)
CBL-EX-PWR-C13-IT	AC power cable, Italy (10 A/250V, 2.5m)
CBL-EX-PWR-C13-JP	AC power cable, Japan (12 A/125V, 2.5m)
CBL-EX-PWR-C13-KR	AC power cable, Korea (10 A/250V, 2.5m)
CBL-EX-PWR-C13-SZ	AC power cable, Switzerland (10 A/250V, 2.5m)
CBL-EX-PWR-C13-UK	AC power cable, UK (10 A/250V, 2.5m)
CBL-EX-PWR-C13-US	AC power cable, U.S. (13 A/125V, 2.5m)—not to be used with EX3400-48P SKUs
CBL-PWR-C13-US-48P	AC power cable, US/Canada (15A/125V, 2.5m)–for EX3400-48P only
Subscription Licenses	
S-EX-A-C2-3	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year
S-EX-A-C2-5	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 5 year

Product Number	Description
S-EX-P-C2-3	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year
S-EX-P-C2-5	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 5 year
S-EX-A-C3-3	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 48-port switches, 5 year
S-EX-P-C3-3	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 48-port switches, 5 year
S-EX-A-C2-3-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches, 3 year with SVC CORE support, 3 year
S-EX-A-C2-5-COR	Software, EX Series Advanced license, Class 2 (24 ports), includes Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 5 YEAR
S-EX-P-C2-3-COR	Software, EX Series Premium license, Class 2 (24 ports), includes Wired Assurance 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 Wired Assurance subscription for EX Series 24-port switches with SVC CORE support, 5 YEAR
S-EX-A-C3-3-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 3 YEAR
S-EX-A-C3-5-COR	Software, EX Series Advanced license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 5 YEAR
S-EX-P-C3-3-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 3 YEAR
S-EX-P-C3-5-COR	Software, EX Series Premium license, Class 3 (32 or 48 ports), includes Wired Assurance subscription for EX Series 48-port switches, 3 year with SVC CORE support, 5 YEAR
Perpetual Licenses	
S-EX-A-C2-P	Software, EX Series Advanced license, Class 2 (24 ports), Perpetual license for EX3400 24-port switches
S-EX-P-C2-P	Software, EX Series Premium license, Class 2 (24 ports), Perpetual license for EX3400 24-port switches
S-EX-A-C3-P	Software, EX Series Advanced license, Class 3 (32 or 48 ports), Perpetual license for EX3400 48-port switches
S-EX-P-C3-P	Software, EX Series Premium license, Class 3 (32 or 48 ports), Perpetual license for EX3400 48-port switches
EX-24-EFL	Enhanced feature license for EX3400 24-port switches
EX-48-EFL	Enhanced feature license for EX3400 48-port switches
EX-24-AFL	Advanced feature license for EX3400-24T, and EX3400-24P switches
EX-48-AFL	Advanced feature license for EX3400-48P, EX3400-48T, EX3400-48T-AFI, EX3400-48T-DC, and EX3400-48T-DC-AFI switches
EX-QFX-MACSEC-ACC4	MACsec software license for EX3400, EX4300, and EX4200 access switches
Power Supplies	
JPSU-150-AC-AFI	EX3400 150W AC power supply, back-to-front airflow (power cord ordered separately)
JPSU-150-AC-AFO	EX3400 150W AC power supply, front-to-back airflow (power cord ordered separately)

Product Number	Description
JPSU-150-DC-AFO	EX3400 150W DC power supply, front-to-back airflow (power cord ordered separately)
JPSU-600-AC-AFO	EX3400 600W AC power supply, front-to-back airflow (power cord ordered separately)
JPSU-920-AC-AFO	EX3400 920W AC power supply, front-to-back airflow (power cord ordered separately)
Fans	
EX3400-FAN-AFI	EX3400 back-to-front fan, spare
EX3400-FAN-AFO	EX3400 front-to-back fan, spare
Optics	
EX-SFP-10GE-DAC-1M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 1m
EX-SFP-10GE-DAC-3M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 3m
EX-SFP-10GE-DAC-5M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 5m
EX-SFP-10GE-DAC-7M	SFP+ 10-Gigabit Ethernet Direct Attach Copper (twinax copper cable), 7m
EX-SFP-10GE-ER	SFP+ 10GBASE-ER 10-Gigabit Ethernet Optics, 1550 nm for 40 km transmission on SMF
EX-SFP-10GE-ZR	SFP+ 10GBASE-ZR; LC connector; 1550 nm; 80 km reach on single-mode fiber
EX-SFP-10GE-LR	SFP+ 10GBASE-LR 10-Gigabit Ethernet Optics, 1310 nm for 10 km transmission on single-mode fiber-optic (SMF)
EX-SFP-10GE-LRM	SFP+ 10-Gigabit Ethernet LRM Optics, 1310 nm for 220m transmission on multimode fiber-optic (MMF)
EX-SFP-10GE-SR	SFP+ 10GBASE-SR 10-Gigabit Ethernet Optics, 850 nm for up to 300m transmission on MMF
EX-SFP-10GE-USR	SFP+ 10-Gigabit Ethernet Ultra Short Reach Optics, 850 nm for 10m on OM1, 20m on OM2, 100m on OM3 multimode fiber
EX-SFP-1GE-LX	SFP 1000BASE-LX Gigabit Ethernet Optics, 1310 nm for 10 km transmission on SMF
EX-SFP-1GE-LX40K	SFP 1000BASE-LX Gigabit Ethernet Optics, 1310 nm for 40 km transmission on SMF
EX-SFP-1GE-SX	SFP 1000BASE-SX Gigabit Ethernet Optics, 850 nm for up to 550m transmission on MMF
EX-SFP-1GE-LH	SFP 1000BASE-LH Gigabit Ethernet Optics, 1550 nm for 70 km transmission on SMF
EX-SFP-1GE-T	SFP 10/100/1000BASE-T Copper Transceiver Module for up to 100m transmission on Category 5
EX-SFP-GE10KT13R14	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1490 nm for 10 km transmission on single strand of SMF
EX-SFP-GE10KT13R15	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1550 nm for 10 km transmission on single strand of SMF
EX-SFP-GE10KT14R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1490 nm/Rx 1310 nm for 10 km transmission on single strand of SMF

Product Number	Description
EX-SFP-GE10KT15R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1550 nm/Rx 1310 nm for 10 km transmission on single strand of SMF
EX-SFP-GE40KT13R15	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1310 nm/Rx 1550 nm for 40 km transmission on single strand of SMF
EX-SFP-GE40KT15R13	SFP 1000BASE-BX Gigabit Ethernet Optics, Tx 1550 nm/Rx 1310 nm for 40 km transmission on single strand of SMF
EX-SFP-GE80KCW1470	SFP Gigabit Ethernet CWDM, LC connector; 1470 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1490	SFP Gigabit Ethernet CWDM, LC connector; 1490 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1510	SFP Gigabit Ethernet CWDM, LC connector; 1510 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1530	SFP Gigabit Ethernet CWDM, LC connector; 1530 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1550	SFP Gigabit Ethernet CWDM, LC connector; 1550 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1570	SFP Gigabit Ethernet CWDM, LC connector; 1570 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1590	SFP Gigabit Ethernet CWDM, LC connector; 1590 nm, 80 km reach on single-mode fiber
EX-SFP-GE80KCW1610	SFP Gigabit Ethernet CWDM, LC connector; 1610 nm, 80 km reach on single-mode fiber
For 40G VCP Ports	
QFX-QSFP-40G-SR4	QSFP+ 40GBASE-SR4 40-Gigabit Optics, 850 nm for up to 150m transmission on multimode fiber
QFX-QSFP-DAC-1M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 1 meter
QFX-QSFP-DAC-3M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 3 meter
EX-QSFP-40GE-DAC-50CM	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 50 cm
JNP-QSFP-DAC-5M	QSFP+ 40-Gbps QSFP+ Passive DAC Cable, 5 meter
QFX-QSFP-40G-eSR4	QSFP+ 40-Gbps QSFP+ on OM3/OM4 multimode fiber
JNP-QSFP-40G-LR4	QSFP+ 40-Gbps QSFP+, 10 km range on single-mode fiber

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

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

SECURITY DIRECTOR

Product Overview

Juniper Security Director provides extensive security policy management and control through a centralized, web-based interface and enforces policies against emerging and traditional threat vectors, protecting physical, virtual, and containerized firewalls on-premises and across multiple clouds simultaneously. It provides detailed visibility into application performance and reduces risk while enabling users to diagnose and resolve problems quickly. Providing extensive scale, granular policy control, and policy breadth across the network, Security Director delivers network-wide visibility and policy management for deployments on-premises, in the cloud, and as a service. Administrators can quickly manage all phases of the security policy lifecycle for firewalls and next-generation firewall services, including zero-touch provisioning and configuration. They also gain insight into sources of risk across the network—all from a single user interface.

Product Description

Network security management is how administrators operationalize their firewall architecture and provide visibility across individual deployments, policies, and traffic, and gain insight from threat analytics across the entire network traffic.

It can be a curse if management solutions are slow or restricted in their level of granularity and visibility; or a blessing with intuitive wizards, time-saving orchestration tools, and insightful dashboards. Juniper Security Director provides security policy management for all physical, virtual, and containerized firewalls. Through an intuitive, centralized, web-based interface, Security Director reduces management costs and errors by providing visibility, intelligence, automation, and effective security across Juniper SRX Series Services Gateways deployments in both public and private clouds concurrently.

Security Director Cloud

Security Director Cloud is your portal to Secure Access Service Edge (SASE), bridging your current security deployments with your SASE rollout. Security Director Cloud enables organizations to manage security anywhere and everywhere, on-premises, in the cloud, and as a service with unified policy management that follows users, devices, and applications wherever they go. Policies can be created once and applied everywhere. Organizations can use Security Director Cloud for network-wide visibility and policy management for deployments simultaneously to securely transition to a SASE architecture.

With Security Director Cloud, organizations can transition to a SASE architecture seamlessly, securely, and at a pace that's best for each individual business. The bidirectional sync between Security Director and on-premises and individual firewalls, provides a cohesive management experience that supports a seamless transition to the cloud. Its unified policy management provides easy-to-use, consistent security policy that follows the user, device, and application—without needing to copy over or recreate rule sets.

Figure 1: Security Director Cloud Architecture

The Security Director dashboard provides customizable, information-rich widgets offering visually intuitive displays that report security device status at a glance. A pallet allows you to easily navigate between firewall, threat, intrusion prevention system (IPS), application, throughput, and device-related information to create a customized view of the SRX Series firewall environment.
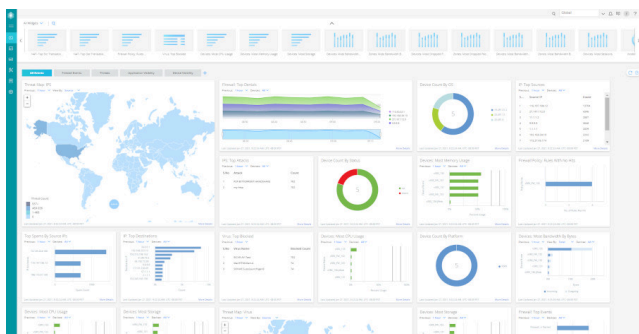
Figure 2: Security Director Dashboard

You can quickly determine which SRX Series devices have generated the most alarms or consume the most CPU cycles or RAM for a specific time period through the dashboard.

By drilling down on widgets, administrators can sort and search various events to effortlessly obtain detailed information such as top viruses blocked, top destinations, top sources, and other details to ensure that the network is safe.

Security Director is an innovative solution for managing the application, user, and IP environments. Network administrators can choose between three different views to see how applications and users affect the network, observe bandwidth utilization levels, or determine the number of sessions created. Granular usage details, such as which applications are the riskiest, can be viewed. Top talkers are easy to identify and remediate. You can also compare different time frames and determine when utilization is typically at its peak.

With most security management solutions, administrators must run a report or open several tabs to find the applications or users they want to manage. Then they must manually create the required firewall rules, determine where to place those rules, and hope they don't conflict with any existing rules, thereby creating a host of new problems. This task is an exceptionally tedious, time-consuming, and error-prone process.

Security Director is extremely user-friendly and does not require users to run multiple reports or open multiple tabs and manually analyze the data to find answers. Instead, Security Director provides administrators with the ability to quickly find crucial answers, at a glance, without digging through reports.

Using the actionable intelligence that Security Director provides, administrators can select one or more applications or user/user groups from the Application Visibility or User Visibility charts, then simply select "Block." Security Director automatically creates the requested rule or rules and deploys them in the optimal location within the rules base, avoiding any anomalies and taking the guesswork out of managing the application and user environment.

Security Director also provides actionable intelligence when it comes to threat mitigation. For example, the Threat Map widget shows the number of IPS events detected per geographic location, giving you immediate awareness of threat activity and providing the means to remediate with one click.

Juniper Secure Edge

Juniper® Secure Edge provides Firewall as a Service (FWaaS) in a single-stack software architecture managed by Juniper Security Director Cloud—empowering organizations to secure their workforce wherever they are. Users have fast, reliable, and secure access to the applications and resources they need, ensuring great experiences for users. IT security teams gain seamless visibility across the entire network, all while leveraging their existing investments, helping them transition to a cloud-delivered architecture at their own pace.

With consistent security policies that follow the user, device, and application without having to copy over or recreate rule sets, Juniper Secure Edge makes it easy to deploy cloud delivered application control, intrusion prevention, content and Web filtering, and effective threat prevention without breaking visibility or security enforcement.
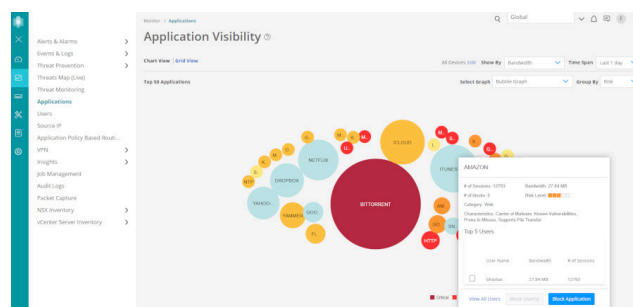

Figure 3: Application Visibility Dashboard

Security Director Insights

Security Director Insights expands end-to-end visibility by correlating and scoring threat events across the complete security stack. It offers a timeline view mapped to the MITRE attack framework, so administrators can focus on the highest priority threats. It unifies visibility across the network by correlating threat detection information, including detections from other vendor products, and it enables one-touch mitigation to quickly address gaps in defense.

Security Director Insights empowers organizations to automate threat remediation and microsegmentation policies across the entire network with Policy Enforcer, Security Director's built-in orchestration.

Figure 4: Security Director Insights Dashboard

Security Director Insights collects and automatically correlates data across multiple security layers—email, endpoint, server, cloud workloads, and network—so threats are detected faster, and security teams can improve investigation and response times. It also uses mitigation rules to prevent future attacks.

With Security Director Insights, customers can:

- Understand when and where an attack is happening by using it to correlate and prioritize security events from multiple security solutions across various parts of the network.
- Use custom threat and incident scoring so that security teams respond to and can mitigate attacks that have the potential to do the most harm to the business.
- Mitigate active threats across the network—on Juniper SRX Series firewalls, EX and QFX Series switches, wired and wireless access points driven by Mist AI, along with third-party solutions—with one click.

Customers can use Security Director Insights to track attack indicators across their networks, from client to workload, regardless of which vendor product in their environment made the detection.

Policy Enforcer

Policy Enforcer provides a simplified user intent-based threat management policy modification and distribution tool. It allows updated policies to deploy on Juniper Networks EX Series Ethernet Switches, MX routers, QFX Series switches, and Juniper physical, virtual, and containerized SRX Series Services Gateways.

Security Director provides automated enforcement and policy orchestration that allows updated security policies to deploy across Juniper SRX firewalls, EX Series switches, QFX series switches, MX series routers, and third-party network devices. The software helps automate threat remediation and microsegmentation policies across your entire network.

An intuitive user interface within Security Director gives administrators the flexibility to control and modify network elements, enforcement groups, threat management services, and profile definitions.

Using Policy Enforcer, Security Director automatically updates policies based on threats identified by Juniper Advanced Threat Prevention (ATP). Through Policy Enforcer, updated policies are then distributed to enforcement points such as firewalls, switches, and wireless solutions, ensuring real-time network protection.

Firewall Policy Analysis

With Firewall Policy Analysis, you can gain visibility into anomalies in your network by scheduling reports that show shadow or redundant firewall rules. Firewall Policy Analysis makes recommendations to fix all reported issues and uses automation to optimize your rule-base.

Firewall Policy Analysis eliminates the need to run a monthly or quarterly anomaly report, and having to manually fix all of the issues. You run the report once and Security Director will adapt.

Table 1. Security Director Features and Benefits

Features	Description	Benefits
Secure Edge	Provides FWaaS in a single-stack software architecture with application control, IPS, anti-malware, web proxy and filtering, and advanced threat protection all delivered as a service.	Enables administrators to seamlessly secure their remote workforce with consistent security policies that follow the user wherever they go.
Security Director Insights	Collects and automatically correlates data across multiple security layers—email, endpoint, server, cloud workloads and network—so threats are detected faster, and security teams can improve investigation and response times. Prevents future attacks with mitigation rules.	- Understand when and where an attack is happening by using it to correlate and prioritize security events from multiple security solutions across various parts of the network. - Use custom threat and incident scoring so that security teams respond to and can mitigate attacks that have the potential to do the most harm to the business. - Mitigate active threats across the network—on SRX Series firewalls, EX and QFX Series Switches, wired and wireless access points driven by Mist AI, along with third-party solutions—with one click.
Policy Enforcer	Creates and centrally manages security policies through a user intent-based system, evaluating threat intelligence from multiple sources while dynamically enforcing policies in near real-time across the network. Enforces threat management policies at firewalls and access switches, aggregating threat feeds from Advanced Threat Prevention Cloud, SecIntel, and on-premises custom threat intelligence solutions with allow list and blocklist support.	- Reduces the risk of compromise by eliminating stale rules and automatically updating enforcement based on network threat conditions. - Improves protective posture by quarantining and tracking infected hosts. - Allows security practitioners to focus on maximizing security rather than writing tedious policy rules.
Firewall policy analysis	Provides the ability to schedule reports that show shadow or redundant firewall rules are and recommends actions to fix all reported issues.	Allows administrators to maintain an efficient firewall rule base by quickly identifying ineffective and unnecessary rules.
Firewall rule placement guidance	Upon creation of a new rule, analyzes existing firewall rule base to recommend optimal position and application.	Significantly reduces shadowing rules.
Metadata-based policies	Enables administrators to create object metadata-based user-intent firewall policies.	Simplifies policy creation and maintenance workflows. In addition to making policies more readable from a user intent perspective, this feature streamlines firewall troubleshooting.
Dynamic policy actions	Enables security administrators to initiate different actions, including firewall, logging, IPS, URL filtering, and Antivirus, among others, under different conditions.	Reduces the time required to adjust the organization's security posture under different conditions and streamlines threat remediation workflows.
Firewall policy hit count	Shows hit counts for each firewall via meters and filters that display which rules are hit the least. Security Director also can keep a lifetime hit count.	Allows administrators to assess each firewall rule's effectiveness and quickly identify unused rules, resulting in a better-managed firewall environment.
Live threat map	Displays where threats are originating in near real-time and allows you to take action to stop them.	Provides near-real-time insight into network-related threats. Allows you to block traffic going to or coming from a specific country with a single click.
Security Assurance	Automate security policies across the network, including firewalls, routers, and switches for accurate enforcement, consistent security, and compliance.	Guarantee that security rules are always placed correctly for intended effectiveness.
Innovative application visibility and management	Provides an easy and intuitive way to see which applications use the most bandwidth, have the most sessions, or are most at risk. Know which users are accessing non-productive applications and by how much. Top talkers are displayed in an easy-to-understand manner. Block applications, IP address, and users with a simple mouse click.	Delivers greater visibility, enforcement, control, and protection over the network.
Simplified threat management	Reports where threats are originating and where they are going via a global map. Blocking a country is easy; simply mouse over the country to take action.	Provides insight needed to manage network-related threats effectively. Allows you to block traffic going to or coming from a specific country with a single click.
Snapshot support	Allows users to snapshot, compare, and roll back configuration versions.	Simplifies configuration changes and allows recovery from configuration errors.
Policy lifecycle management	Provides the ability to manage all phases of security policy lifecycles, including creating, deploying, monitoring, remediation, and maintenance.	- Enables central control over stateful firewall, AppFW, URL filtering, anti-virus, IPS, VPN, and NAT in one Security Director management console. - Eases administration by unifying common policy tasks within a single interface. - Reduces errors by enabling the reuse of policies across multiple devices.
Drag-and-drop	Allows firewall, IPS, and NAT rules to be reordered by simply dragging them to a new location.	Enables firewall, IPS, and NAT objects to be added or copied by dragging them from one cell to another or from a pallet located at the bottom of the policy table.
VPN auto-provisioning and import	Simply tell Security Director which VPN topology to use and which devices you want to participate in the topology, and Security Director will auto-provision the tunnels. If you have an existing Juniper VPN environment, Security Director can import the VPNs to provide an easy and effective way to manage them.	Makes pre-existing SRX Series firewall VPNs easier to manage.
Role-based access for policies and objects	Allows devices, policies, and objects to be placed within domains and assigns read/write permissions to a user.	Provides customers a way to segment administrative responsibility for policies and objects.
REST APIs for automation	Provides RESTful APIs used in conjunction with automation tools.	Automates configuration and management of physical, virtual, or containerized SRX Series firewalls.

Features	Description	Benefits

Logging and reporting through Junos Space Log Director application	Enables integrated logging and reporting.	Tight coupling with Security Director:
		• Displays rules and events in the same window
		• Allows administrator to easily shift views from logs to corresponding rules and vice versa
		
		Direct access to Security Director policies and objects:
		• Role-based access control (RBAC)
		• Event viewer for events aggregation and filtering
		• Dashboard with customizable graphs
		• Reports generated and automatically sent via email
		• Email alerts automatically generated based on threshold SRX Series health monitoring:
		  - CPU utilization
		  - Memory utilization
		  - VPN monitoring
		
		System log forwarding to security information and event management (SIEM)

Ordering Information

To order Juniper Security Director and access software licensing information, please visit the How to Buy page at https://www.juniper.net/us/en/how-to-buy/form.html.

Files uploaded to the cloud for processing are destroyed afterward to ensure privacy. The Juniper Networks privacy policy can be found on the product Web portal at https://www.juniper.net/us/en/privacy-policy.html

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.

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.

Corporate and Sales Headquarters

Juniper Networks, Inc.

1133 Innovation Way

Sunnyvale, CA 94089 USA

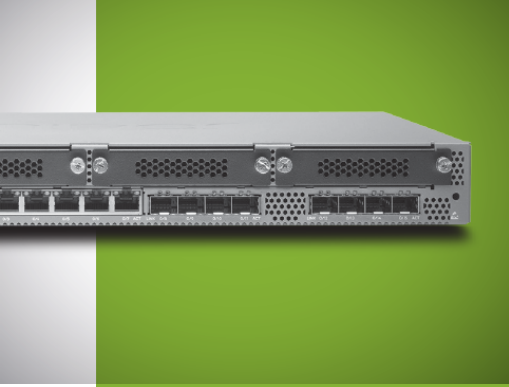**Phone: 888.JUNIPER (888.586.4737)**

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

JUNIPer NETWORKS | Driven by Experience™

SRX300 LINE OF SERVICES GATEWAYS FOR THE BRANCH

Product Overview

The SRX300 line of services gateways combines security, SD-WAN, routing, switching, and WAN interfaces with next-generation firewall and advanced threat mitigation capabilities for cost-effective, secure connectivity across distributed enterprise locations. By consolidating fast, highly available switching, routing, security, and next-generation firewall capabilities in a single device, enterprises can remove network complexity, protect and prioritize their resources, and improve user and application experience while lowering total cost of ownership (TCO).

Product Description

Juniper Networks® SRX300 line of services gateways delivers a next-generation secure SD-WAN and security solution that supports the changing needs of cloud-enabled enterprise networks. Whether rolling out new services and applications across locations, connecting to the cloud, or trying to achieve operational efficiency, the SRX300 line helps organizations realize their business objectives while providing scalable, easy to manage, secure connectivity and advanced threat mitigation capabilities. Next-generation firewall and unified threat management (UTM) capabilities also make it easier to detect and proactively mitigate threats to improve the user and application experience.

The SRX300 line consists of five models:

- **SRX300**: Securing small branch or retail offices, the SRX300 Services Gateway consolidates security, routing, switching, and WAN connectivity in a small desktop device. The SRX300 supports up to 1 Gbps firewall and 300 Mbps IPsec VPN in a single, cost-effective networking and security platform.
- **SRX320**: Securely connecting small distributed enterprise branch offices, the SRX320 Services Gateway consolidates security, routing, switching, and WAN connectivity in a small desktop device. The SRX320 supports up to 1 Gbps firewall and 300 Mbps IPsec VPN in a single, consolidated, cost-effective networking and security platform.
- **SRX340**: Securely connecting midsize distributed enterprise branch offices, the SRX340 Services Gateway consolidates security, routing, switching, and WAN connectivity in a 1 U form factor. The SRX340 supports up to 3 Gbps firewall and 600 Mbps IPsec VPN in a single, cost-effective networking and security platform.
- **SRX345**: Best suited for midsize to large distributed enterprise branch offices, the SRX345 Services Gateway consolidates security, routing, switching, and WAN connectivity in a 1 U form factor. The SRX345 supports up to 5 Gbps firewall and 800 Mbps IPsec VPN in a single, consolidated, cost-effective networking and security platform.
- **SRX380**: A high-performance and secure SD-WAN gateway, the SRX380 offers superior and reliable WAN connectivity while consolidating security, routing, and switching for distributed enterprise offices. The SRX380 features greater port density than other SRX300 models, with 16x1GbE PoE+ and 4x10GbE ports, and includes redundant dual power supplies, all in a 1 U form factor.

SRX300 Highlights

The SRX300 line of services gateways consists of secure SD-WAN routers that bring high performance and proven deployment capabilities to enterprises that need to build a worldwide network of thousands of remote sites. WAN or Internet connectivity and Wi-Fi module options include:

- Ethernet, T1/E1, ADSL2/2+, and VDSL
- 3G/4G LTE wireless
- 802.11ac Wave 2 Wi-Fi

Mist AI

WAN Assurance

Mist WAN Assurance is a cloud service that brings AI-powered automation and service levels to Juniper SRX Series Services Gateways, complementing the Juniper Secure SD-WAN solution. Mist WAN Assurance transforms IT operations from reactive troubleshooting to proactive remediation, turning insights into actions and delivering operational simplicity with seamless integration into existing deployments.

- SRX Series firewalls, deployed as secure SD-WAN edge devices, deliver the rich Junos streaming telemetry that provides the insights needed for WAN health metrics and anomaly detection. This data is leveraged within the Mist Cloud and AI engine, driving simpler operations, reducing mean time to repair (MTTR) and providing greater visibility into end-user experiences.
- Insights derived from SRX Series SD-WAN gateway telemetry data allows WAN Assurance to compute unique "User Minutes" that indicate whether users are having a good experience.
- The Marvis assistant for WAN allows you to ask direct questions like "Why is my Zoom call bad?" and provides complete insights, correlation, and actions.
- Marvis Actions identifies and summarizes issues such as application latency conditions, congested WAN circuits, or negotiation mismatches.

Simplifying Branch Deployments (Secure Connectivity/SD-WAN)

The SRX300 line delivers fully automated SD-WAN to both enterprises and service providers.

- A Zero-Touch Provisioning (ZTP) feature simplifies branch network connectivity for initial deployment and ongoing management.
- SRX300 firewalls offer best-in-class secure connectivity.
- The SRX300 firewalls efficiently utilize multiple links and load balance traffic across the enterprise WAN, blending traditional MPLS with other connectivity options such as broadband internet, leased lines, 4G/LTE, and more.
- Policy- and application-based forwarding capabilities enforce business rules created by the enterprise to steer application traffic towards a preferred path.

Comprehensive Security Suite

The SRX300 line offers a comprehensive suite of application security services, threat defenses, and intelligence services. The services consist of intrusion prevention system (IPS), application security user role-based firewall controls and cloud-based antivirus, anti-spam, and enhanced Web filtering, protecting networks from the latest content-borne threats. Integrated threat intelligence via Juniper Networks SecIntel offers adaptive threat protection against Command and Control (C&C)-related botnets and policy enforcement based on GeoIP. Customers can also leverage their own custom and third-party feeds for protection from advanced malware and other threats. Integrating the Juniper Networks Advanced Threat Protection solution, the SRX300 line detects and enforces automated protection against known malware and zero-day threats with a very high degree of accuracy.

Industry-Certified Junos Operating System

SRX300 Services Gateways run the Junos operating system, a proven, carrier-hardened OS that powers the top 100 service provider networks in the world.

The rigorously tested, carrier-class, rich routing features such as IPv4/IPv6, OSPF, BGP, and multicast have been proven over 15 years of worldwide deployments.

The SRX300 line also enables agile SecOps through automation capabilities that support Zero Touch Deployment, Python scripts for orchestration, and event scripting for operational management.

Features and Benefits

Business Requirement	Feature/Solution	SRX300 Advantages
High performance	Up to 5 Gbps of routing and firewall performance	• Best suited for small, medium and large branch office deployments • Addresses future needs for scale and feature capacity
Business continuity	Stateful high availability (HA), IP monitoring	• Uses stateful HA to synchronize configuration and firewall sessions • Supports multiple WAN interface with dial-on-demand backup • Route/link failover based on real-time link performance
SD-WAN	Better end-user application and cloud experience and lower operational costs	• ZTP simplifies remote device provisioning • Advanced Policy-Based Routing (APBR) orchestrates business intent policies across the enterprise WAN • Application quality of experience (AppQoE) measures application SLAs and improves end-user experience • Controls and prioritizes traffic based on application and user role
End-user experience	WAN assurance	• Complements the Juniper Secure SD-WAN solution with AI-powered automation and service levels • Provides visibility and insights into users, applications, WAN links, control and data plane, and CPU for proactive remediation
Highly secure	IPsec VPN, Remote Access/SSL VPN, Media Access Control Security (MACsec)	• Creates secure, reliable, and fast overlay link over public internet • Employs anti-counterfeit features to protect from unauthorized hardware spares • Includes high-performance CPU with built-in hardware to assist IPsec acceleration • Provides TPM-based protection of device secrets such as passwords and certificates • Offers secure and flexible remote access SSL VPN with Juniper Secure Connect
Threat protection	IPS, antivirus, anti-spam, enhanced web filtering, Juniper Advanced Threat Prevention Cloud, Encrypted Traffic Insights, and Threat Intelligence Feeds	• Provides real-time updates to IPS signatures and protects against exploits • Protects from zero-day attacks • Implements industry-leading antivirus and URL filtering • Integrates open threat intelligence platform with third-party feeds • Restores visibility that was lost due to encryption without the heavy burden of full TLS/SSL decryption
Application visibility	On-box GUI, Security Director	• Detects 4,275 Layer 3-7 applications, including Web 2.0 • Inspects and detects applications inside the SSL encrypted traffic
Easy to manage and scale	On-box GUI, Security Director	• Includes centralized management for auto-provisioning, firewall policy management, Network Address Translation (NAT), and IPsec VPN deployments, or simple, easy-to-use on-box GUI for local management
Minimize TCO	Junos OS	• Integrates routing, switching, and security in a single device • Reduces operation expense with Junos automation capabilities

SRX300

SRX320

SRX340

SRX345

SRX380

SRX300 Specifications

Software Specifications

Routing Protocols

- IPv4, IPv6, ISO, Connectionless Network Service (CLNS)
- Static routes
- RIP v1/v2
- OSPF/OSPF v3
- BGP with Route Reflector
- IS-IS
- Multicast: Internet Group Management Protocol (IGMP) v1/v2, Protocol Independent Multicast (PIM) sparse mode (SM)/dense mode (DM)/source-specific multicast (SSM), Session Description Protocol (SDP), Distance Vector Multicast Routing Protocol (DVMRP), Multicast Source Discovery Protocol (MSDP), Reverse Path Forwarding (RPF)
- Encapsulation: VLAN, Point-to-Point Protocol (PPP), Frame Relay, High-Level Data Link Control (HDLC), serial, Multilink Point-to-Point Protocol (MLPPP), Multilink Frame Relay (MLFR), and Point-to-Point Protocol over Ethernet (PPPoE)
- Virtual routers
- Policy-based routing, source-based routing
- Equal-cost multipath (ECMP)

QoS Features

- Support for 802.1p, DiffServ code point (DSCP), EXP
- Classification based on VLAN, data-link connection identifier (DLCI), interface, bundles, or multifield filters
- Marking, policing, and shaping
- Classification and scheduling
- Weighted random early detection (WRED)
- Guaranteed and maximum bandwidth
- Ingress traffic policing
- Virtual channels
- Hierarchical shaping and policing

Switching Features

- ASIC-based Layer 2 Forwarding
- MAC address learning
- VLAN addressing and integrated routing and bridging (IRB) support
- Link aggregation and LACP
- LLDP and LLDP-MED
- STP, RSTP, MSTP
- MVRP
- 802.1X authentication

Firewall Services

- Stateful and stateless firewall
- Zone-based firewall
- Screens and distributed denial of service (DDoS) protection
- Protection from protocol and traffic anomaly
- Integration with Pulse Unified Access Control (UAC)
- Integration with Aruba Clear Pass Policy Manager
- User role-based firewall
- SSL Inspection (Forward-proxy)

Network Address Translation (NAT)

- Source NAT with Port Address Translation (PAT)
- Bidirectional 1:1 static NAT
- Destination NAT with PAT
- Persistent NAT
- IPv6 address translation

VPN Features

- Tunnels: Site-to-Site, Hub and Spoke, Dynamic Endpoint, AutoVPN, ADVPN, Group VPN (IPv4/ IPv6/ Dual Stack)
- Juniper Secure Connect: Remote access / SSL VPN
- Configuration payload: Yes
- IKE Encryption algorithms: Prime, DES-CBC, 3DES-CBC, AEC-CBC, AES-GCM, SuiteB
- IKE authentication algorithms: MD5, SHA-1, SHA-128, SHA-256, SHA-384
- Authentication: Pre-shared key and public key infrastructure (PKI) (X.509)
- IPsec (Internet Protocol Security): Authentication Header (AH) / Encapsulating Security Payload (ESP) protocol
- IPsec Authentication Algorithms: hmac-md5, hmac-sha-196, hmac-sha-256
- IPsec Encryption Algorithms: Prime, DES-CBC, 3DES-CBC, AEC-CBC, AES-GCM, SuiteB
- Perfect forward secrecy, anti-reply
- Internet Key Exchange: IKEv1, IKEv2
- Monitoring: Standard-based dead peer detection (DPD) support, VPN monitoring
- VPNs GRE, IP-in-IP, and MPLS

Network Services

- Dynamic Host Configuration Protocol (DHCP) client/server/relay
- Domain Name System (DNS) proxy, dynamic DNS (DDNS)
- Juniper real-time performance monitoring (RPM) and IP-monitoring
- Juniper flow monitoring (J-Flow)[1]
- Bidirectional Forwarding Detection (BFD)
- Two-Way Active Measurement Protocol (TWAMP)
- IEEE 802.3ah Link Fault Management (LFM)
- IEEE 802.1ag Connectivity Fault Management (CFM)

High Availability Features

- Virtual Router Redundancy Protocol (VRRP)
- Stateful high availability
- Dual box clustering
- Active/passive
- Active/active
- Configuration synchronization
- Firewall session synchronization
- Device/link detection
- In-Band Cluster Upgrade (ICU)
- Dial on-demand backup interfaces
- IP monitoring with route and interface failover

Management, Automation, Logging, and Reporting

- SSH, Telnet, SNMP
- Smart image download
- Juniper CLI and Web UI
- Mist AI
  - Simplified management
  - WAN Assurance
- Junos Space and Security Director
- Python
- Junos OS event, commit, and OP script
- Application and bandwidth usage reporting
- Auto installation
- Debug and troubleshooting tools
- Zero-Touch Provisioning with Contrail Service Orchestration

Advanced Routing Services

- Packet mode
- MPLS (RSVP, LDP)
- Circuit cross-connect (CCC), translational cross-connect (TCC)
- L2/L3 MPLS VPN, pseudowires
- Virtual private LAN service (VPLS), next-generation multicast VPN (NG-MVPN)
- MPLS traffic engineering and MPLS fast reroute

Application Security Services[1]

- Application visibility and control
- Application-based firewall
- Application QoS
- Application-based advanced policy-based routing
- Application quality of experience (AppQoE)

Enhanced SD-WAN Services

- Application-based advanced policy-based routing (APBR)
- Application-based link monitoring and switchover with Application quality of experience (AppQoE)

Threat Defense and Intelligence Services[1]

- Intrusion prevention
- Antivirus
- Antispam
- Category/reputation-based URL filtering
- Protection from botnets (command and control)
- Adaptive enforcement based on GeoIP
- Juniper Advanced Threat Prevention to detect and block zero-day attacks
- Adaptive Threat Profiling
- Encrypted Traffic Insights
- SecIntel to provide threat intelligence

[1]Offered as advanced security services subscription licenses.

Hardware Specifications

Specification	SRX300	SRX320	SRX340	SRX345	SRX380
Connectivity					
Total onboard ports	8x1GbE	8x1GbE	16x1GbE	16x1GbE	20 (16x1GbE, 4x10GbE)
Onboard RJ-45 ports	6x1GbE	6x1GbE	8x1GbE	8x1GbE	16x1GbE
Onboard small form-factor pluggable (SFP) transceiver ports	2x1GbE	2x1GbE	8x1GbE	8x1GbE	4x10GbE SFP+
MACsec-capable ports	2x1GbE	2x1GbE	16x1GbE	16x1GbE	16x1GbE 4x10GbE
Out-of-band (OOB) management ports	0	0	1x1GbE	1x1GbE	1x1GbE
Mini PIM (WAN) slots	0	2	4	4	4
Console (RJ-45 + miniUSB)	1	1	1	1	1
USB 3.0 ports (type A)	1	1	1	1	1
PoE+ ports	N/A	6[2]	0	0	16
Memory and Storage					
System memory (RAM)	4 GB	4 GB	4 GB	4 GB	4GB
Storage	8 GB	8 GB	8 GB	8 GB	100GB SSD
SSD slots	0	0	1	1	1
Dimensions and Power					
Form factor	Desktop	Desktop	1 U	1 U	1U
Size (WxHxD)	12.63 x 1.37 x 7.52 in. (32.08 x 3.47 x 19.10 cm)	11.81 x 1.73 x 7.52 in. (29.99 x 4.39 x 19.10 cm)	17.36 x 1.72 x 14.57 in. (44.09 x 4.36 x 37.01 cm)	17.36 x 1.72 x 14.57 in. (44.09 x 4.36 x 37.01 cm) / 17.36 x 1.72 x 18.7 in. (44.09 x 4.36 x 47.5 cm)[3]	17.36 x 1.72 x 18.7 in. (44.09 x 4.37 x 47.5 cm) / 17.36 x 1.72 x 20.47 in. (44.09 x 4.37 x 52 cm)
Weight (device and PSU)	4.38 lb (1.98 kg)	3.28 lb (1.51 kg)[4] / 3.4 lb (1.55 kb)[5]	10.80 lb (4.90 kg)	10.80 lb (4.90 kg) / 11.02 lb (5 kg)[6]	15 lb (6.8 kg) with 1xPSU / 16.76 lb (7.6 kg) with 2xPSU
Redundant PSU	No	No	No	Yes	Yes
Power supply	AC (external)	AC (external)	AC (internal)	AC (internal) / DC (internal)[6]	1+1 hot-swappable AC PSU
Rated DC voltage range	N/A	N/A	N/A	-48 to -60 VDC (with -15% and +20% tolerance)	NA
Rated DC operating voltage range	N/A	N/A	N/A	-40.8 VDC to -72 VDC[6]	N/A
Maximum PoE power	N/A	180 W[5]	N/A	N/A	480W
Average power consumption	24.9 W	46 W[4]/221 W[5]	122 W	122 W	150 W (without PoE) 510 W (with PoE)
Average heat dissipation	85 BTU/h	157 BTU/h[4]/755 BTU/h[5]	420 BTU/h	420 BTU/h	511.5 BTU/hr (without PoE)
Maximum current consumption	0.346 A	0.634 A[4]/2.755 A[5]	1.496 A	1.496 A / 6A @ -48 VDC[6]	1.79A/7.32A
Acoustic noise level	0dB (fanless)	37 dBA[4]/40 dBA[5]	45.5 dBA	45.5 dBA	< 50dBA @ room temperature 27C
Airflow/cooling	Fanless	Front to back	Front to back	Front to back	Front to back
Environmental, Compliance, and Safety Certification					
Operational temperature	-4° to 140° F (-20° to 60° C)[7]	32° to 104° F (0° to 40° C)	32° to 104° F (0° to 40° C)	32° to 104° F (0° to 40° C) -22° to 131° F (-30° to 55° C) for SRX345-DC	32° to 104° F (0° to 40° C) with MPIMs 32° to 122° F (0° to 50° C) without MPIMs
Nonoperational temperature	-4° to 158° F (-20° to 70° C)	-4° to 158° F (-20° to 70° C)	-4° to 158° F (-20° to 70° C)	-4° to 158° F (-20° to 70° C) -22° to 158° F (-30° to 70° C) for SRX345-DC	-4° to 158° F (-20° to 70° C)
Operating humidity	10% to 90% noncondensing	10% to 90% noncondensing	10% to 90% noncondensing	10% to 90% noncondensing	10% to 90% noncondensing
Nonoperating humidity	5% to 95% noncondensing	5% to 95% noncondensing	5% to 95% noncondensing	5% to 95% noncondensing	5% to 95% noncondensing

Specification	SRX300	SRX320	SRX340	SRX345	SRX380
Meantime between failures (MTBF)	44.5 years	32.5 years[4]/ 26 years[5]	27 years	27.4 years	28.1 years
FCC classification	Class A	Class A	Class A	Class A	Class A
RoHS compliance	RoHS 2	RoHS 2	RoHS 2	RoHS 2	RoHS 2
FIPS 140-2	Level 2 (Junos 15.1X49-D60)	Level 1 (Junos 15.1X49-D60)	Level 2 (Junos 15.1X49-D60)	Level 2 (Junos 15.1X49-D60)	N/A
Common Criteria certification	NDPP, VPNEP, FWEP, IPSEP (based on Junos 15.1X49-D60)	NDPP, VPNEP, FWEP, IPSEP (based on Junos 15.1X49-D60)	NDPP, VPNEP, FWEP, IPSEP (based on Junos 15.1X49-D60)	NDPP, VPNEP, FWEP, IPSEP (based on Junos 15.1X49-D60)	N/A

[2]SRX320 with PoE+ ports available as a separate SKU: SRX320-POE.
[3]SRX345 with dual AC PSU model.
[4]SRX320 non PoE model.
[5]SRX320-POE with 6 ports PoE+ model.
[6]SRX345 with DC power supply (operating temperature as per GR-63 Issue 4 2012 test criteria).
[7]As per GR63 Issue 4 (2012) test criteria.

Performance and Scale

Parameter	SRX300	SRX320	SRX340	SRX345	SRX380
Routing with packet mode (64 B packet size) in Kpps[8]	300	300	550	750	1700
Routing with packet mode (IMIX packet size) in Mbps[8]	800	800	1,600	2,300	5000
Routing with packet mode (1,518 B packet size in Mbps[8]	1,500	1,500	3,000	5,500	10,000
Stateful firewall (64 B packet size) in Kpps[8]	200	200	350	550	1700
Stateful firewall (IMIX packet size) in Mbps[8]	500	500	1,100	1,700	4,000
Stateful firewall (1,518 B packet size) in Mbps[8]	1,000	1,000	3,000	5,000	10,000
IPsec VPN (IMIX packet size) in Mbps[8]	100	100	200	300	1,000
IPsec VPN (1,400 B packet size) in Mbps[8]	300	300	600	800	3,500
Application visibility and control in Mbps[9]	500	500	1,000	1,700	6,000
Recommended IPS in Mbps[9]	200	200	400	600	2,000
Next-generation firewall in Mbps[9]	100	100	200	300	1,000
Route table size (RIB/FIB) (IPv4 or IPv6)	256,000/256,000	256,000/256,000	1 million/600,000[10]	1 million/600,000[10]	1 million/600,000[10]
Maximum concurrent sessions (IPv4 or IPv6)	64,000	64,000	256,000	375,000	380,000
Maximum security policies	1,000	1,000	2,000	4,000	4,000
Connections per second	5,000	5,000	10,000	15,000	50,000
NAT rules	1,000	1,000	2,000	2,000	3,000
MAC table size	15,000	15,000	15,000	15,000	16,000
IPsec VPN tunnels	256	256	1,024	2,048	2,048
Number of remote access/SSL VPN (concurrent) users	25	50	150	250	500
GRE tunnels	256	256	512	1,024	2,048
Maximum number of security zones	16	16	64	64	128
Maximum number of virtual routers	32	32	64	128	128
Maximum number of VLANs	1,000	1,000	2,000	3,000	3,000
AppID sessions	16,000	16,000	64,000	64,000	64,000
IPS sessions	16,000	16,000	64,000	64,000	64,000
URLF sessions	16,000	16,000	64,000	64,000	64,000

[8]Throughput numbers based on UDP packets and RFC2544 test methodology.
[9]Throughput numbers based on HTTP traffic with 44 KB transaction size.
[10]Route scaling numbers are with enhanced route-scale features turned on.

WAN and Wi-Fi Interface Support Matrix

WAN and Wi-Fi Interface	SRX300	SRX320	SRX340	SRX345	SRX380
1 port T1/E1 MPIM (SRX-MP-1T1E1-R)	No	Yes	Yes	Yes	Yes
1 port VDSL2 Annex A/M MPIM (SRX-MP-1VDSL2-R)	No	Yes	Yes	Yes	Yes
4G / LTE MPIM (SRX-MP-LTE-AA and SRX-MP-LTE-AE)	No	Yes	Yes	Yes	Yes
802.11ac Wave 2 Wi-Fi MPIM	No	Yes	Yes	Yes	Yes

WAN and Wi-Fi Interface Module Performance Data

Interface Module	Description	Performance
4G/LTE	Dual SIM 4G/LTE-A CAT 6	Up to 300 Mbps download and 50 Mbps upload
Wi-Fi MPIM	Dual band 802.11 a/b/g/n/ac Wave 2 (2x2 MIMO)	Up to 866 Mbps at 5GHz / 300 Mbps at 2.4GHz

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

To order Juniper Networks SRX Series Services Gateways, and to access software licensing information, please visit the How to Buy page at https://www.juniper.net/us/en/how-to-buy/form.html

	SRXnnn-SYS-JB
Hardware	Included
Management (CLI, JWEB, SNMP, Telnet, SSH)	Included
Ethernet switching (L2 Forwarding, IRB, LACP etc)	Included
L2 Transparent, Secure Wire	Included
Routing (RIP, OSPF, BGP, Virtual router)	Included
Multicast (IGMP, PIM, SSDP, DMVRP)	Included
Packet Mode	Included
Overlay (GRE, IP-IP)	Included
Network Services (J-Flow, DHCP, QOS, BFD)	Included
Stateful Firewall, Screens, ALGs	Included
NAT (static, SNAT, DNAT)	Included
IPSec VPN (Site-to-Site VPN, Auto VPN, Group VPN)	Included
Firewall policy enforcement (UAC, Aruba CPPM)	Included
Remote Access/SSL VPN (concurrent users)[11]	Optional
Chassis Cluster, VRRP, ISSU/ICU	Included
Automation (Junos scripting, auto-installation)	Included
MPLS, LDP, RSVP, L3 VPN, pseudo-wires, VPLS	Included

[11] Based on concurrent users; two free licenses included

Base System Model Numbers

Product Number	Description
SRX300-SYS-JB	SRX300 Services Gateway includes hardware (8GbE, 4G RAM, 8G Flash, power adapter and cable) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching). RMK not included.
SRX320-SYS-JB	SRX320 Services Gateway includes hardware (8GbE, 2x MPIM slots, 4G RAM, 8G Flash, power adapter and cable) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching). RMK not included.
SRX320-SYS-JB-P	SRX320 Services Gateway includes hardware (8GbE, 6-port POE+, 2x MPIM slots, 4G RAM, 8G Flash, power adapter and cable) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching). RMK not included.
SRX340-SYS-JB	SRX340 Services Gateway includes hardware (16GbE, 4x MPIM slots, 4G RAM, 8G Flash, power supply, cable and RMK) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching)
SRX345-SYS-JB	SRX345 Services Gateway includes hardware (16GbE, 4x MPIM slots, 4G RAM, 8G Flash, power supply, cable and RMK) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching)
SRX345-SYS-JB-2AC	SRX345 Services Gateway includes hardware (16GbE, 4x MPIM slots, 4G RAM, 8G Flash, dual AC power supply, cable and RMK) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching)
SRX345-SYS-JB-DC	SRX345 Services Gateway includes hardware (16GbE, 4x MPIM slots, 4G RAM, 8G Flash, single DC power supply, cable and RMK) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching)
SRX380-P-SYS-JB-AC	SRX380 Services Gateway includes hardware (16GbE PoE+, 4x10GbE, 4x MPIM slots, 4GB RAM, 100GB SSD, single AC power supply, cable and RMK) and Junos Software Base (firewall, NAT, IPSec, routing, MPLS and switching)

Software Licenses

Product Number	Description
S-SRXnnn-A1-1	SRXnnn Advanced 1 - JSE/SD-WAN, includes SD-WAN features App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack) and IPS; 1-year subscription (example: S-SRX380-A1-1)
S-SRXnnn-A1-3	SRXnnn Advanced 1 - JSE/SD-WAN, includes SD-WAN features App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack) and IPS; 3-year subscription (example: S-SRX380-A1-3)
S-SRXnnn-A1-5	SRXnnn Advanced 1 - JSE/SD-WAN, includes SD-WAN features App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack) and IPS; 5-year subscription (example: S-SRX380-A1-5]
S-SRXnnn-P1-1	SRXnnn Premium 1, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Juniper ATP; 1-year subscription (example: S-SRX380-P1-1)
S-SRXnnn-P1-3	SRXnnn Premium 1, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Juniper ATP; 3-year subscription (example: S-SRX380-P1-3)
S-SRXnnn-P1-5	SRXnnn Premium 1, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Juniper ATP; 5-year subscription (example: S-SRX380-P1-5)
S-SRXnnn-A2-1	SRXnnn Advanced 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Content Security (UTM, Cloud AV, URLF and AS); 1-year subscription (example: S-SRX380-A2-1)
S-SRXnnn-A2-3	SRXnnn Advanced 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Content Security (UTM, Cloud AV, URLF and AS); 3-year subscription (example: S-SRX380-A2-3)
S-SRXnnn-A2-5	SRXnnn Advanced 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS and Content Security (UTM, Cloud AV, URLF and AS); 5-year subscription (example: S-SRX380-A2-5)
S-SRXnnn-P2-1[12]	SRXnnn Premium 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS, Content Security (UTM, Cloud AV, URLF and AS) and Juniper Sky ATP; 1-year subscription (example: S-SRX380-P2-1)
S-SRXnnn-P2-3[12]	SRXnnn Premium 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS, Content Security (UTM, Cloud AV, URLF and AS) and Juniper Sky ATP; 3-year subscription (example: S-SRX380-P2-3)
S-SRXnnn-P2-5[12]	SRXnnn Premium 2, includes App+ (AppID, AppFW, AppQoS, AppRoute, AppQoE, AppTrack), IPS, Content Security (UTM, Cloud AV, URLF and AS) and Juniper Sky ATP; 5-year subscription (example: S-SRX380-P2-5)

[12]The S-SRXnnn-P2-1/3/5 year SKUs are only available for the SRX340, SRX345, and SRX380 models.

Remote Access/Juniper Secure Connect VPN Licenses

Product Number	Description
S-RA3-SRX300-S-1	SW, Remote Access VPN - Juniper, 25 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-SRX320-S-1	SW, Remote Access VPN - Juniper, 50 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-SRX340-S-1	SW, Remote Access VPN - Juniper, 150 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-SRX345-S-1	SW, Remote Access VPN - Juniper, 250 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-SRX380-S-1	SW, Remote Access VPN - Juniper, 500 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-5CCU-S-1	SW, Remote Access VPN - Juniper, 5 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-25CCU-S-1	SW, Remote Access VPN - Juniper, 25 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-50CCU-S-1	SW, Remote Access VPN - Juniper, 50 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-100CCU-S-1	SW, Remote Access VPN - Juniper, 100 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-250CCU-S-1	SW, Remote Access VPN - Juniper, 250 Concurrent Users, Standard, with SW support, 1 Year

Product Number	Description
S-RA3-500CCU-S-1	SW, Remote Access VPN - Juniper, 500 Concurrent Users, Standard, with SW support, 1 Year
S-RA3-SRX300-S-3	SW, Remote Access VPN - Juniper, 25 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-SRX320-S-3	SW, Remote Access VPN - Juniper, 50 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-SRX340-S-3	SW, Remote Access VPN - Juniper, 150 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-SRX345-S-3	SW, Remote Access VPN - Juniper, 250 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-SRX380-S-3	SW, Remote Access VPN - Juniper, 500 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-5CCU-S-3	SW, Remote Access VPN - Juniper, 5 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-25CCU-S-3	SW, Remote Access VPN - Juniper, 25 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-50CCU-S-3	SW, Remote Access VPN - Juniper, 50 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-100CCU-S-3	SW, Remote Access VPN - Juniper, 100 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-250CCU-S-3	SW, Remote Access VPN - Juniper, 250 Concurrent Users, Standard, with SW support, 3 Year
S-RA3-500CCU-S-3	SW, Remote Access VPN - Juniper, 500 Concurrent Users, Standard, with SW support, 3 Year

Interface Modules

Product Number	Description
SRX-MP-1T1E1-R	1 port T1E1, MPIM form factor supported on SRX320, SRX340, SRX345, SRX380, and SRX550M. ROHS complaint
SRX-MP-1VDSL2-R	1 port VDSL2 (backward compatible with ADSL / ADSL2+), MPIM form factor supported on SRX320, SRX340, SRX345, SRX380, and SRX550M. ROHS complaint
SRX-MP-LTE-AA	4G / LTE MPIM support 1, 3, 5, 7-8, 18-19, 21, 28, 38-41 LTE bands (for Asia and Australia). Supported on SRX320, SRX340, SRX345, SRX380, and SRX550M
SRX-MP-LTE-AE	4G / LTE MPIM support 1-5, 7-8, 12-13, 30, 25-26, 29-30, 41 LTE bands (for Americas and EMEA). Supported on SRX320, SRX340, SRX345, SRX380, and SRX550M
SRX-MP-WLAN-US	Wireless access point (Wi-Fi) MPIM for SRX320, SRX34x, SRX380, and SRX550M. Supported for U.S. regulatory bands only.
SRX-MP-WLAN-WW	Wireless access point (Wi-Fi) MPIM for SRX320, SRX34x, SRX380, and SRX550M. Supported for worldwide regulatory bands (excluding U.S. and Israel).
SRX-MP-WLAN-IL	Wireless access point (Wi-Fi) MPIM for SRX320, SRX34x, SRX380, and SRX550M. Supported for Israel regulatory bands only.
SRX-MP-ANT-EXT	Antenna extension cable for WLAN MPIM on SRX Series platforms

Accessories

Product Number	Description
SRX300-RMK0	SRX300 rack mount kit with adaptor tray
SRX300-RMK1	SRX300 rack mount kit without adaptor tray
SRX300-WALL-KIT0	SRX300 wall mount kit with brackets
SRX320-P-RMK0	SRX320-POE rack mount kit with adaptor tray
SRX320-P-RMK1	SRX300-POE rack mount kit without adaptor tray
SRX320-RMK0	SRX320 rack mount kit with adaptor tray
SRX320-RMK1	SRX320 rack mount kit without adaptor tray
SRX320-WALL-KIT0	SRX320 wall mount kit with brackets
SRX34X-RMK	SRX340 and SRX345 rack mount kit
EX-4PST-RMK	SRX380 rack mount kit
JSU-SSD-MLC-100	Juniper Storage Unit, SSD, MLC, 100GB
JPSU-600-AC-AFO	SRX380 600W AC PSU, front-to-back

About Juniper Networks

At Juniper Networks, we are dedicated to dramatically simplifying network operations and driving superior experiences for end users. Our solutions deliver industry-leading insight, automation, security and AI to drive real business results. We believe that powering connections will bring us closer together while empowering us all to solve the world's greatest challenges of well-being, sustainability and equality.