

Licensing Guide

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Licensing Guide

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YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

END USER LICENSE AGREEMENT

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About This Guide

This guide describes how to activate, install, manage, and monitor licenses on Juniper Networks devices. Note that this guide includes instructions for two different licensing portals:

- Juniper Agile Licensing (JAL) portal—Available at: <https://license.juniper.net/licensemanage/>. Use the JAL portal to activate and manage licenses on most Juniper products.
- Licensing Management System (LMS)— Available at: <https://lms.juniper.net/lcrs/license.do>. Use the LMS to activate and manage licenses on Application Acceleration, Firewall/IPSec VPN, Identity and Policy Control (IPC) SRC, IDP Appliances, Junos Space, NSM, STRM/JSA, SBR Carrier, WLC Series and WLM Series.

This guide describes how to install, manage, and monitor licenses on Juniper Networks devices. [Table 1 on page x](#) shows the platforms supported in the licensing guide.

Table 1: Platforms Supported in the Licensing Guide

Category	Flex Software License Model	Non-Flex Software License Model
Routing	ACX710, ACX5448, ACX5448-D, ACX5448-M, MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers, PTX10003, PTX10008, vMX, and vBNG	ACX5448-D, ACX5448-M, M Series, MX Series, PTX Series, T Series, and vMX
Security	cSRX, JATP400, JATP700, ATP Appliances, SRX Series, and vSRX	SRX Series and vSRX
Switching	EX2300, EX3400, EX4300, and QFX Series Switches	EX Series and QFX Series Switches

Table 1: Platforms Supported in the Licensing Guide (Continued)

Category	Flex Software License Model	Non-Flex Software License Model
Network Management	Contrail Service Orchestration (CSO), HealthBot, NFX350, NorthStar Controller, and NorthStar Planner	Contrail Service Orchestration, Junos Space, Network and Security Manager (NSM), J-Web Device Manager, and Steel-Belted Radius® Carrier

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CHAPTER 1

Overview

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Flex Software License Model Overview

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- [Flex Software License Model | 2](#)
- [Getting Started | 3](#)
- [Understanding Subscription Licenses | 4](#)

Flex Software License Model

The Flex Software License Model is a framework, set of policies, and tools that help unify and thereby simplify Juniper product-driven licensing and packaging.

The major components of the framework are:

- A focus on customer segments (enterprise, service provider, and cloud) and use cases for Juniper Networks hardware and software products.
- The introduction of subscription licenses and subscription portability for all Juniper Networks products including Junos OS, Contrail, and Juniper cloud-based services.
- The introduction of a common, three-tiered model (standard, advanced, and premium) for all Juniper Networks software products.

Getting Started

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- [Understanding the Three-Tier Model](#) | 3

As a customer ordering a Juniper Networks product under the Flex Software License Model that includes hardware, you order:

- The hardware platform that includes the standard license.
- The customer support package that fits your needs.
- The advanced or premium subscription licenses, according to your use case. These subscription licenses include embedded customer support.

As a customer ordering a Juniper Networks software product, you order:

- The standard, advanced, or premium subscription license, according to your use case. These subscription licenses include embedded customer support.

Understanding the Three-Tier Model

As new hardware platforms become available under the Flex Software License Model, you can customize your purchase using one of the following three models:

- **Standard License**

The standard license includes the hardware platform and a license to use the software with the standard feature set. Standard Return Material Authorization (RMA) policies apply with no changes in case of hardware failure. Customer support is ordered separately as you select your preferred hardware support policy and support for the standard software features. For more information about support policy, see [Contact Support](#). The hardware platform does not require a separate license, and the software right-to-use (RTU) license is perpetual for the licensed features.

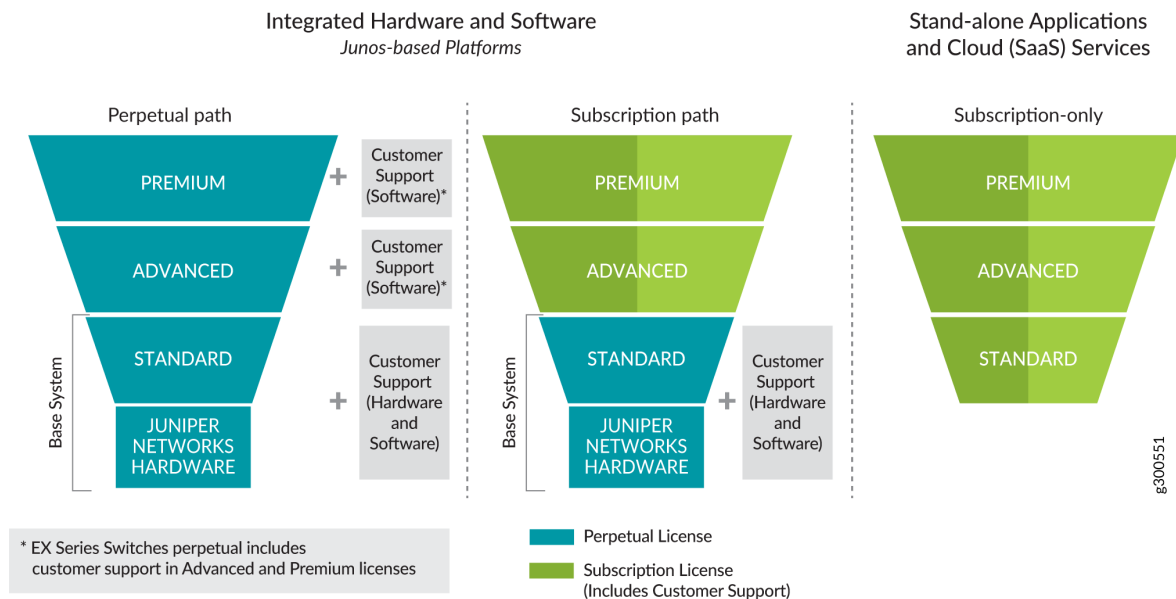
- **Advanced License**

The advanced license includes the subscription-based license to use the advanced software features. The license term is 1 year, 3 years, or 5 years. Customer support for the software features is included. These features differ by use case and platform. For example, to view the list of features for the QFX Switches, see [QFX switch device class and SKUs](#).

- **Premium License**

The premium license includes the subscription-based license to use the Junos OS software features. The license term is 1 year, 3 years, or 5 years. Customer support for the software features is included. These features differ by use case and platform. The premium license is a superset and includes all the features from the advanced license and additional features. For example, to view the list of features for the QFX Switches, see [QFX switch device class and SKUs](#).

Figure 1: Three-Tier Model for the Flex Software License Model



Understanding Subscription Licenses

IN THIS SECTION

- [License Portability | 6](#)

All advanced and premium licenses are offered as subscriptions under the Flex Software License Model. Subscription licenses are available in 1-year, 3-year, or 5-year terms. After the order fulfillment, the subscription period begins after the completion of a 30-day grace period.

[Table 2 on page 5](#) describes the subscription terms for purchase and number of months to use the license.

Table 2: Subscription Terms Details

Subscription Terms	Number of Months for the License
1-year	13 months
3-year	37 months
5-year	61 months

Flex Software Subscription licenses include the following attributes:

- Specific products might offer a subset of these licenses. At the end of the term, you have three options:
 - You can renew the subscription, to continue to use the features and scale granted under the license.
 - You can order a replacement subscription.

Upgrading and downgrading the subscription models is supported. In both cases, subscription models are processed as a new order, and you might use the features and scale granted under the new license. For example, you have a 5-year subscription and you want to downgrade to a 3-year subscription or the other way around.
- You might decline to renew or purchase a replacement subscription. In this case, you may no longer use the features and scale granted under the expired subscription. You can continue to use the hardware and any software features which are granted under the perpetual license.
- Alternatively, when an advanced subscription term expires, your needs may require an upgrade to the premium subscription term.
- Subscription licenses include Juniper customer support for software features as part of the subscription license, unless customer support is provided by a Juniper partner directly. There is no need to order a separate customer support policy for the advanced and premium licenses.
- Premium licenses include all the features in the premium and advanced licenses.
- Subscriptions may be ordered at any time.
- New software features may be available over time with new software versions.
- Subscription licenses are portable for similar devices.
- Subscriptions are cancelable at the end of the term.

- Renewals are not automatic.

License Portability

Subscription licenses are portable. This means that if you buy a new similar hardware platform, then you can port the subscription license. You can stop using the license on one hardware platform and move it to another hardware platform. This portability allows you to balance features across hardware platforms in the network without having to buy extra feature licenses.

Flex Software License for Routing Devices

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- ACX710, ACX5448, ACX5448-D, and ACX5448-M | 7
- Flex Software License for cRPD | 12
- Flex Software License for MX Series Routers and MPC Service Cards | 14
- Flex Software License for PTX Series Routers | 26
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ACX710, ACX5448, ACX5448-D, and ACX5448-M

[Table 3 on page 8](#) describes the licensing support for the ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers.

Figure 2 on page 8 shows ACX710, ACX5448, ACX5448-D, and ACX5448-M features for the Flex Software License Model Three-Tier (standard, advanced, and premium licenses).

Figure 2: ACX5448-D and ACX5448-M Three-Tiered Model for the Juniper Flex Program

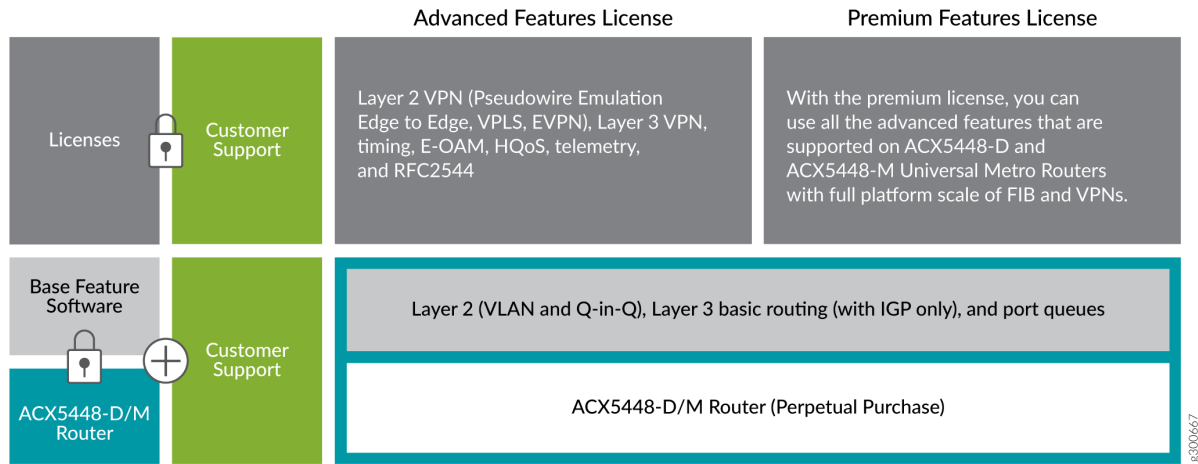


Table 3: Supported Features on ACX710, ACX5448, ACX5448-D, and ACX5448-M

License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Standard	Basic Layer 2 only. Layer 3 (with IGP only) for management connectivity	Layer 2 (basic VLAN)	Default Layer 2 scale and 8 queues per port

Table 3: Supported Features on ACX710, ACX5448, ACX5448-D, and ACX5448-M (Continued)

License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Advanced	Layer 2 or Layer 3 aggregation, Distributed Access Architecture (DAA), Converged Interconnect Network (CIN), mobile backhaul (BH), fronthaul (FH), or midhaul (MH), and next-generation fiber to the home (NG-FTTH)	Layer 2 VPN (Pseudowire Emulation Edge to Edge, VPLS, EVPN), Layer 3 VPN, timing, E-OAM, HQoS, telemetry, and RFC2544	32 VRFs and 8 NG-MVPN
Premium	Provider edge	With the premium license, you can use all the advanced features that are supported on ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers with full platform scale of FIB and VPNs.	32+ VRFs and 8+ NG-MVPN

[Table 4 on page 9](#) describes license SKUs for ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers.

Table 4: ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers license SKUs

ACX Universal Metro Routers	License Model	SKUs
ACX710	Standard	ACX710DC

Table 4: ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers license SKUs
(Continued)

ACX Universal Metro Routers	License Model	SKUs
	Advanced	S-ACX-100GE-A1-P S-ACX-100GE-A-1* S-ACX-100GE-A-3 S-ACX-100GE-A-5
	Premium	S-ACX-100GE-P1-P S-ACX-100GE-P-1* S-ACX-100GE-P-3 S-ACX-100GE-P-5
ACX5448, ACX5448-D, and ACX5448-M	Standard	ACX5448-AC-AFI ACX5448-AC-AFO ACX5448-DC-AFI ACX5448-DC-AFO ACX5448-D-AC-AFO ACX5448-D-DC-AFO ACX5448-D-AC-AFI ACX5448-D-DC-AFI ACX5448-M-AC-AFO ACX5448-M-DC-AFO ACX5448-M-AC-AFI ACX5448-M-DC-AFI

Table 4: ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers license SKUs
(Continued)

ACX Universal Metro Routers	License Model	SKUs
	Advanced	S-ACX-400GE-A1-P
		S-ACX-400GE-A-1*
		S-ACX-400GE-A-3
		S-ACX-400GE-A-5
	Premium	S-ACX-400GE-P1-P
		S-ACX-400GE-P-1*
		S-ACX-400GE-P-3
		S-ACX-400GE-P-5

*1 year subscription term is for renewal only.

[Table 4 on page 9](#) shows the definition of ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers license SKUs.

Table 5: ACX710, ACX5448, ACX5448-D, and ACX5448-M Universal Metro Routers License SKU Definition

License SKU	SKU Character Description
S-ACX-100GE/400GE-A/A1/P/P1-P/ 1/3/5	<p>S—Software</p> <p>ACX—Product name: ACX</p> <p>100GE/400GE—Bandwidth</p> <p>A/A1/P/P1—License Model</p> <p>1/3/5—Subscription term: 1 year, 3 years, or 5 years</p> <p>P—Perpetual</p>

Flex Software License for cRPD

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cRPD

Figure 3 on page 12 shows cRPD features for for Flex Software License Model.

Figure 3: cRPD

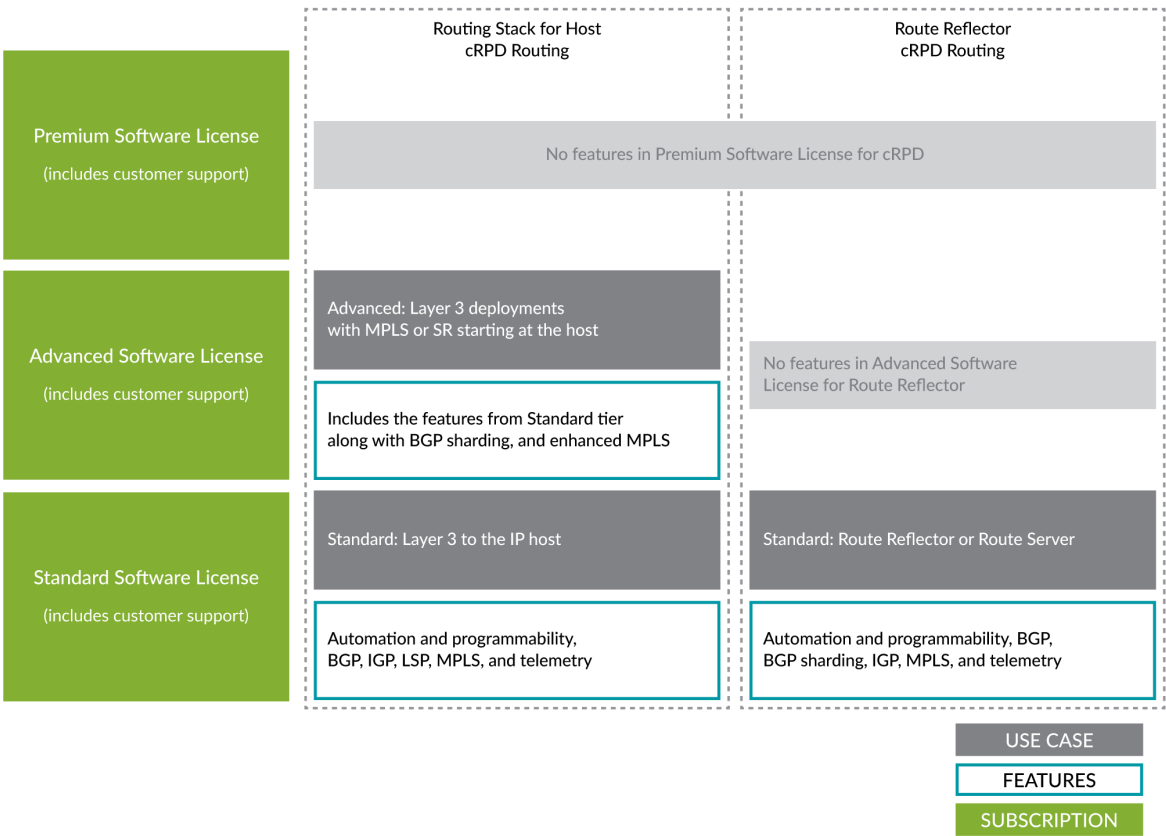


Table 6 on page 13 describes the licensing support for Routing Stack for Host on containerized routing protocol process (cRPD).

Table 6: Routing Stack for Host Features on cRPD

License Model	Routing Stack for Host SKUs	Use Case Examples or Solutions	Detailed Features	Scale
Advanced	S-CRPD-A-HR-1/3/5 S-CRPD-100-A-HR-1/3/5 S-CRPD-1K-A-HR-1/3/5 S-CRPD-10K-A-HR-1/3/5	Layer 3 deployments with MPLS or SR starting at the host	Includes the features from Standard tier along with BGP sharding, and enhanced MPLS	Without scale restrictions on BGP peers and RIB
Standard	S-CRPD-S-HR-1/3/5 S-CRPD-100-S-HR-1/3/5 S-CRPD-1K-S-HR-1/3/5 S-CRPD-10K-S-HR-1/3/5	Layer 3 to the IP host	Automation and programmability, BGP, IGP, LSP, MPLS, and telemetry	16 BGP Peers and 4M RIB

Table 7 on page 13 describes the licensing support with use case examples Route Reflector on containerized routing protocol process (cRPD).

Table 7: Route Reflector Features on cRPD

License Model	Route Reflector SKUs	Use Case Examples or Solutions	Detailed Features	Scale
Standard	S-CRPD-S-RR-1 S-CRPD-S-RR-3 S-CRPD-S-RR-5	Route Reflector or Route Server	Automation and programmability, BGP, BGP sharding, IGP, MPLS, and telemetry	No scale restrictions on RIB

Table 8 on page 14 shows cRPD SKU definition.

Table 8: cRPD SKU Definition

SKU	SKU Character Description
S-CRPD- <i>S/A</i> -HR- <i>1/3/5</i>	S —Software
S-CRPD- <i>100/1K/10K</i> - <i>S/A</i> -HR- <i>1/3/5</i>	CRPD —Product name cRPD
S-CRPD-S-RR- <i>1/3/5</i>	S —Standard software subscription
	A —Advanced software subscription
	HR —Host Routing
	RR —Route Reflector
	100 —Bundle of 100 software licenses
	1K —Bundle of 1000 software licenses
	10K —Bundle of 10000 software licenses
	1/3/5 —Subscription term 1, 3, or 5 years

To add, delete, and managing license, refer [Managing Licenses](#).

Flex Software License for MX Series Routers and MPC Service Cards

IN THIS SECTION

- MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers | 15
- MX-SPC3 Services Card | 24

**MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C,
MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E,
MX10K-LC2101 Line Cards and MX204 Routers**

[Table 9 on page 17](#) describes the licensing support with use case examples for the MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 line cards and MX204 routers.

MPC10E-10C and MPC10E-15C line cards are supported on MX240, MX480, and MX960 devices



MX2K-MPC11E line cards are supported on MX2010 and MX2020 devices

MX10K3-L2103 line card is supported on MX10003 device

MX10K-LC2101 line cards are supported on MX10008 and MX10016 devices

Figure 4 on page 16 shows MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 line cards and MX204 routers features for the Three-Tier (standard, advanced, and premium licenses).

Figure 4: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers

Premium Software License (includes customer support)		Premium: Services		<ul style="list-style-type: none">• Includes advanced features• High scale IP-VPNs• IP fabrics (SRv6 and SRm6)• PWHT for Layer 3 VPNs or BNG• Inline NAT and inline MDI• 1:1 inline J-Flow	SCALE: 32+ IP VPNs 8+ multicast VPNs
Advanced Software License (includes customer support)		Advanced: Transport		<ul style="list-style-type: none">• IP routing, IGP (OSFP and IS-IS), IP-FRR, PIM variants, and IGMP• Internet eBGP peering, BGP multihoming (add path and multi-path), EPE, and BGP PIC• BGP Flow specification• All Layer 2 services—E-LINE (Layer 2 VPNs, Layer 2 ckt, EVPN VPWS, EVPN FXC), E-LAN (bridging, H-VPLS, EVPN, and IRB), E-TREE (H-VPLS, EVPN, and IRB), Layer 2 multicast (snooping included)• All MPLS transport—LDP, RSVP-TE, SR, SR-TE, and MPLS-FRR (including TI-LFA)• IP fabrics (GRE, MPLSoUDP, VxLAN, and IPinIP)• Streaming telemetry and SNMP• Policers, ACLs, J-Flow (sampled), sFlow, port mirroring, and per VLAN queuing• Timing (all variants)• OAM—BFD, Ethernet CFM or LFM, MPLS or SR (ping and traceroute), services OAM, RPM, and TWAMP	SCALE: 32 IP VPNs – all address families 8 next-generation MVPN
Standard Software License 	Customer Support 	Standard: Basic Layer 2 features		Bridging with port and single level VLAN (dot1Q), and LAG	SCALE: Not Applicable
Hardware					

USE CASE

SUBSCRIPTION

FEATURES

PERPETUAL

Table 9: Supported Features on MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers

License Model	Use Case Examples or Solutions	Feature Buckets	Scale
Standard	Basic Layer 2 features	Bridging with port and single level VLAN (dot1Q), and LAG	Not Applicable

Table 9: Supported Features on MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers (Continued)

License Model	Use Case Examples or Solutions	Feature Buckets	Scale
Advanced	Transport	<ul style="list-style-type: none"> • IP routing, IGP (OSFP and IS-IS), IP-FRR, PIM variants, and IGMP • Internet eBGP peering, BGP multihoming (add path and multi-path), EPE, and BGP PIC • BGP Flow specification • All Layer 2 services—E-LINE (Layer 2 VPNs, Layer 2 ckt, EVPN VPWS, EVPN FXC), E-LAN (bridging, H-VPLS, EVPN, and IRB), E-TREE (H-VPLS, EVPN, and IRB), Layer 2 multicast (snooping included) • All MPLS transport—LDP, RSVP-TE, SR, SR-TE, and MPLS-FRR (including TI-LFA) • IP fabrics (GRE, MPLSoUDP, VxLAN, and IPinIP) • Streaming telemetry and SNMP • Policers, ACLs, J-Flow (sampled), sFlow, port mirroring, and per VLAN queuing • Timing (all variants) • OAM—BFD, Ethernet CFM or LFM, MPLS or SR (ping and traceroute), services OAM, RPM, and TWAMP 	<p>32 IP VPNs – all address families</p> <p>8 next-generation MVPN</p>

Table 9: Supported Features on MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers (Continued)

License Model	Use Case Examples or Solutions	Feature Buckets	Scale
		The Junos Fusion Technology feature requires an additional license in addition to Advanced license.	
Premium	Services	<ul style="list-style-type: none"> Includes advanced features High scale IP-VPNs IP fabrics (SRv6 and SRm6) PWHT for Layer 3 VPNs or BNG Inline NAT and inline MDI 1:1 inline J-Flow <p>The subscriber management (BNG or CUPS) feature requires an additional license in addition to Premium license.</p>	<p>32+ IP VPNs</p> <p>8+ multicast VPNs</p>

Licensing tiers for Flex Software License Model are based on large functional blocks. Features that are not explicitly listed in Premium license are included in Advanced license, except for the following:

- Junos Fusion Technology requires additional license in addition to Advanced or Premium license.
- Premium software tier is a prerequisite for running subscriber services (BNG(PL), BNG CUPS, MX Mobile User Plane (SAEGW-U, 5G AGF or UPF)).

[Table 10 on page 20](#) describes SKUs for MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers.

Table 10: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers SKUs

Product Model	License Model	SKUs
MX204	Subscription	MX204-HW-BASE S-MX-4C-A1-C1-3/5/1* S-MX-4C-P1-C1-3/5/1*
MX204	Perpetual	MX204-HW-BASE S-MX-4C-A1-C1-P S-MX-4C-P1-C1-P
MX10K3-L2103 Supported on MX10003 device	Subscription	MX10K3-L2103-BASE S-MX-12C-A1-C1-3/5/1* S-MX-12C-P1-C1-3/5/1*
MX10K3-L2103 Supported on MX10003 device	Perpetual	MX10K3-L2103-BASE S-MX-12C-A1-C1-P S-MX-12C-P1-C1-P
MPC5E Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020	Subscription	MPC5E-40G10G MPC5EQ-40G10G MPC5E-100G10G MPC5EQ-100G10G S-MX-2C4-A1-3/5/1* S-MX-2C4-P1-3/5/1*

Table 10: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers SKUs (Continued)

Product Model	License Model	SKUs
<p>MPC5E</p> <p>Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	Perpetual	<p>MPC5E-40G10G</p> <p>MPC5EQ-40G10G</p> <p>MPC5E-100G10G</p> <p>MPC5EQ-100G10G</p> <p>S-MX-2C4-A1-P</p> <p>S-MX-2C4-P1-P</p>
<p>MPC7E-10G</p> <p>Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	Subscription	<p>MPC7E-10G</p> <p>S-MX-4C-A1-3/5/1*</p> <p>S-MX-4C-P1-3/5/1*</p>
<p>MPC7E-10G</p> <p>Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	Perpetual	<p>MPC7E-10G</p> <p>S-MX-4C-A1-P</p> <p>S-MX-4C-P1-P</p>
<p>MPC7E-MRATE</p> <p>Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	Subscription	<p>MPC7E-MRATE</p> <p>S-MX-4C8-A1-3/5/1*</p> <p>S-MX-4C8-P1-3/5/1*</p>
<p>MPC7E-MRATE</p> <p>Supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	Perpetual	<p>MPC7E-MRATE</p> <p>S-MX-4C8-A1-P</p> <p>S-MX-4C8-P1-P</p>

Table 10: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers SKUs (Continued)

Product Model	License Model	SKUs
MPC10E-10C Supported on MX240, MX480, and MX960 devices	Subscription	MPC10E-10C-P-BASE S-MX-10C-A1-3/5/1* S-MX-10C-P1-3/5/1*
MPC10E-10C Supported on MX240, MX480, and MX960 devices	Perpetual	MPC10E-10C-P-BASE S-MX-10C-A1-P S-MX-10C-P1-P
MPC10E-15C Supported on MX240, MX480, and MX960 devices	Subscription	MPC10E-15C-P-BASE S-MX-15C-A1-3/5/1* S-MX-15C-P1-3/5/1*
MPC10E-15C Supported on MX240, MX480, and MX960 devices	Perpetual	MPC10E-15C-P-BASE S-MX-15C-A1-P S-MX-15C-P1-P
MX2K-MPC6E Supported on MX2008, MX2010, and MX2020 devices	Subscription	MX2K-MPC6E S-MX-2C-A1-3/5/1* S-MX-2C-P1-3/5/1* S-MX-2C4-A1-3/5/1* S-MX-2C4-P1-3/5/1* S-MX-4C-A1-3/5/1* S-MX-4C-P1-3/5/1*

Table 10: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers SKUs (Continued)

Product Model	License Model	SKUs
MX2K-MPC6E Supported on MX2008, MX2010, and MX2020 devices	Perpetual	MX2K-MPC6E S-MX-2C-A1-P S-MX-2C-P1-P S-MX-2C4-A1-P S-MX-2C4-P1-P S-MX-4C-A1-P S-MX-4C-P1-P
MX2K-MPC8E Supported on MX2008, MX2010, and MX2020 devices	Subscription	MX2K-MPC8E S-MX-4C8-A1-3/5/1* S-MX-4C8-P1-3/5/1* S-MX-8C-A1-3/5/1* S-MX-8C-P1-3/5/1*
MX2K-MPC8E Supported on MX2008, MX2010, and MX2020 devices	Perpetual	MX2K-MPC8E S-MX-4C8-A1-P S-MX-4C8-P1-P S-MX-8C-A1-P S-MX-8C-P1-P
MX2K-MPC9E Supported on MX2008, MX2010, and MX2020 devices	Subscription	MX2K-MPC9E S-MX-8C-A1-3/5/1* S-MX-8C-P1-3/5/1*

Table 10: MX10K3-L2103, MPC5E, MPC7E-10G, MPC7E-MRATE, MPC10E-10C, MPC10E-15C, MX2K-MPC6E, MX2K-MPC8E, MX2K-MPC9E, MX2K-MPC11E, MX10K-LC2101 Line Cards and MX204 Routers SKUs (Continued)

Product Model	License Model	SKUs
MX2K-MPC9E Supported on MX2008, MX2010, and MX2020 devices	Perpetual	MX2K-MPC9E S-MX-8C-A1-P S-MX-8C-P1-P
MX10K-LC2101 Supported on MX10008 and MX10016 devices	Subscription	MX10K-LC2101-BASE S-MX-24C-A1-3/5/1* S-MX-24C-P1-3/5/1*
MX10K-LC2101 Supported on MX10008 and MX10016 devices	Perpetual	MX10K-LC2101-BASE S-MX-24C-A1-P S-MX-24C-P1-P
MX2K-MPC11E Supported on MX2010 and MX2020 devices	Subscription	MX2K-MPC11E-BASE S-MX-40C-A1-3/5/1* S-MX-40C-P1-3/5/1*
MX2K-MPC11E Supported on MX2010 and MX2020 devices	Perpetual	MX2K-MPC11E-BASE S-MX-40C-A1-P S-MX-40C-P1-P

*1 year subscription term is for renewal only.

MX-SPC3 Services Card

Table 11 on page 25 describes the licensing support with use case examples for the MX-SPC3 services card.

Figure 5 on page 25 shows MX-SPC3 services card features for the Three-Tier (standard, advanced, and premium licenses).

Figure 5: MX-SPC3 Services Card

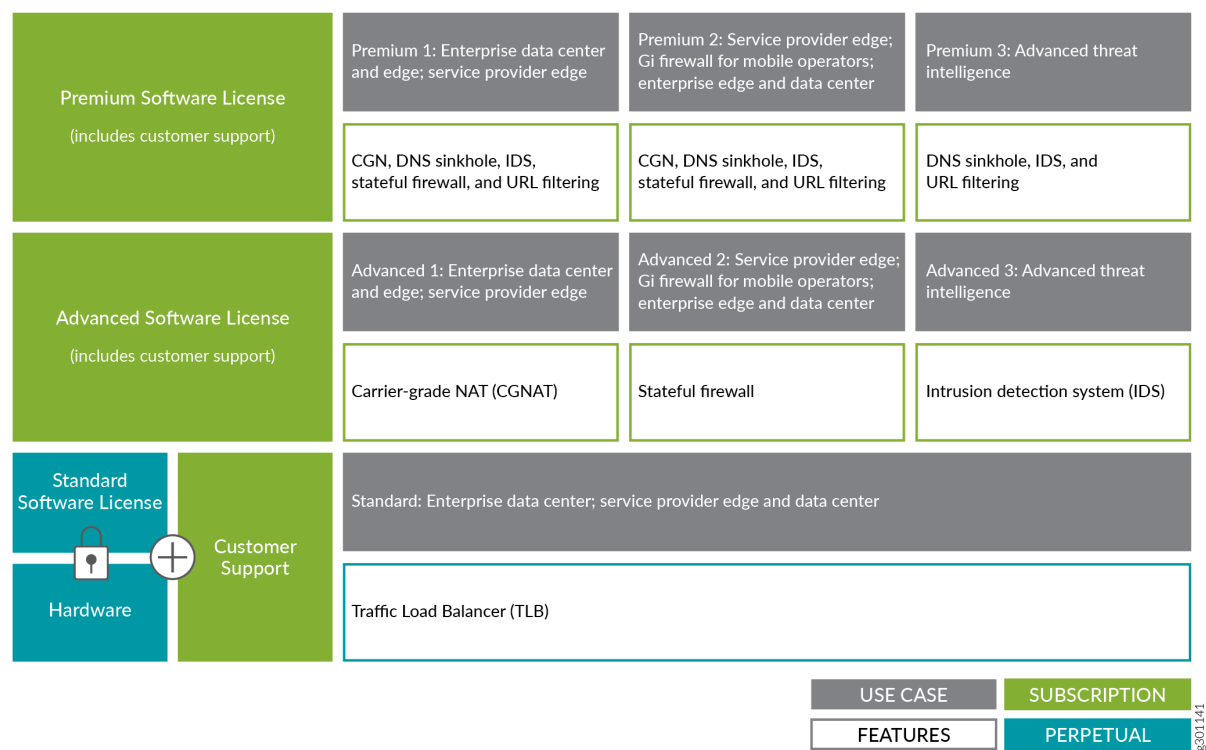


Table 11: Supported Features on MX-SPC3 Services Card

License Model	Use Case Examples or Solutions	Detailed Features	License SKUs
Standard	Enterprise data center; service provider edge and data center	Traffic Load Balancer (TLB)	MX-SPC3
Advanced 1	Enterprise data center and edge; service provider edge	Carrier-grade NAT (CGNAT)	S-MXSPC3-A1-1/3/5 S-MXSPC3-A1-P

Table 11: Supported Features on MX-SPC3 Services Card (Continued)

License Model	Use Case Examples or Solutions	Detailed Features	License SKUs
Advanced 2	Service provider edge; Gi firewall for mobile operators; enterprise edge and data center	Stateful firewall	S-MXSPC3-A2-1/3/5 S-MXSPC3-A2-P
Advanced 3	Advanced threat intelligence	Intrusion detection system (IDS)	S-MXSPC3-A3-1/3/5 S-MXSPC3-A3-P
Premium 1	Enterprise data center and edge; service provider edge	CGN, DNS sinkhole, IDS, stateful firewall, and URL filtering	S-MXSPC3-P1-1/3/5 S-MXSPC3-P1-P
Premium 2	Service provider edge; Gi firewall for mobile operators; enterprise edge and data center	CGN, DNS sinkhole, IDS, stateful firewall, and URL filtering	S-MXSPC3-P2-1/3/5 S-MXSPC3-P2-P
Premium 3	Advanced threat intelligence	DNS sinkhole, IDS, and URL filtering	S-MXSPC3-P3-1/3/5 S-MXSPC3-P3-P

Flex Software License for PTX Series Routers

IN THIS SECTION

- [PTX10001-36MR, PTX10003 and PTX10008](#) | 27

PTX10001-36MR, PTX10003 and PTX10008

Table 12 on page 28 describes the licensing support for the PTX10001-36MR, PTX10003 and PTX10008 Packet Transport Router.

Figure 6 on page 27 shows PTX10001-36MR, PTX10003 and PTX10008 features for the Three-Tier (standard, advanced, and premium licenses).

Figure 6: PTX10001-36MR, PTX10003 and PTX10008

Premium Software License (includes customer support)	Premium 1		Premium 2	
	Advanced 2 features, EVPN-MPLS, IPFIX, Layer 2 circuit, Layer 3 VPN, LDP, RSVP, SR, and SR-TE	SCALE: 2M FIB 6M RIB 1K VRs/VRF (VXLAN) 32 VRF (MPLS Layer 3 VPN), 32K LSP	Premium 1 features and fine-grained QoS	SCALE: 2M to 4M FIB 60M to 80M RIB 1K+ VRs/VRF (VXLAN) 32+ VRF (MPLS Layer 3 VPN) 32K+ LSP
Advanced Software License (includes customer support)	Advanced 1		Advanced 2	
	BGP, FBF, GRE, IS-IS, Junos telemetry interface (JTI), OSPF, sFlow, VRF, and VRRP	SCALE: 256K FIB 3M RIB 1K VR	Advanced 1 features, CFM, EVPN-VXLAN, Multicast, OAM, PTP, and Q-in-Q	SCALE: 256K FIB 3M RIB 1K VRs/VRF (VXLAN)
Standard Software License Hardware	Customer Support Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), quality of service or QoS (Layer 2 and Layer 3), and SNMP			SCALE: 64K FIBs

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Table 12: Licensed Features on PTX10001-36MR, PTX10004, and PTX10008 Devices

License Model	Supported Features	Scale
Standard	Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), quality of service or QoS (Layer 2 and Layer 3), SNMP, and VLAN	64,000 forwarding information bases (FIBs) and 64,000 routing information bases (RIBs), 1000 firewall filters, and 4000 firewall terms
Advanced	A1	
	BGP, FBF, GRE, IS-IS, Junos telemetry interface (JTI), OSPF, VRF-lite, and VRRP	256,000 FIBs, 3 million RIBs, 1000 BGP peers, 1000 IP tunnels, 256 VRF instances (VRFs)/virtual routers, 16,000 PIMs, 4000 firewall filters, and 16,000 firewall terms
	A2	
	A1 features, connectivity fault management (CFM), EVPN-VXLAN, VRF (VXLAN), VXLAN, Q-in-Q, ESI-LAG, Precision Time Protocol (PTP), PTP-BC, and Synchronous Ethernet	1 million FIBs, 3 million RIBs, 1000 LSPs, 1000 BGP peers, 3000 IP tunnels, 1000 VRFs/virtual routers, 32,000 PIMs, 16,000 firewall filters, and 64,000 firewall terms
Premium	P1	
	A2 features, EVPN-MPLS , Layer 2 circuit, Layer 3 VPN, LDP, MPLS, RSVP, segment routing, Layer 3 Multicast, PCEP, PIM, and SR-TE	2 million FIBs, 6 million RIBs, 32,000 LSPs, 2000 BGP peers, 5000 IP tunnels, 1000 VRFs/virtual routers, 32,000 PIMs, 16,000 firewall filters, and 64,000 firewall terms
	P2	

Table 12: Licensed Features on PTX10001-36MR, PTX10004, and PTX10008 Devices (Continued)

License Model	Supported Features	Scale
	P1 features and H-QoS	FIBs and IP tunnels are up to the device capacity, 60 million RIBs, 200,000 LSPs, 4000 BGP peers, 1000+ VRFs/virtual routers, 100,000 PIMs, 64,000 firewall filters and terms

In addition, you can install additional port bandwidth usage license to increase the port bandwidth usage.

For PTX10001-36MR, PTX10003 and PTX10008, the Flex Software License Model supports subscription portability for the cloud, enterprise, and service provider segments.

For feature support on the PTX10001-36MR, PTX10003 and PTX10008, see [Feature Explorer](#) or contact customer support.

The PTX10001-36MR, PTX10003 and PTX10008 supports MACsec, but you must purchase a license to use the MACsec feature. MACsec licenses are perpetual. The licenses are available in two variants, which are described in [Table 13 on page 29](#).

Table 13: MACsec Feature License SKUs

MACsec License SKU	Description
S-PTX10K100GMSEC-P	100-Gigabit Ethernet MACsec license; can be applied to one 100-Gigabit Ethernet port or two 40-Gigabit Ethernet ports
S-PTX10K400GMSEC-P	400-Gigabit Ethernet MACsec license; can be applied to one 400-Gigabit Ethernet port or four 100-Gigabit Ethernet ports

[Table 14 on page 30](#) describes SKUs for the PTX10000 14.4-Tbps line card.

Table 14: PTX10000 14.4-Tbps Line-Card License SKUs

Line Card	License Model	SKU
PTX10000 14.4-Tbps line card	Perpetual	PTX10K-LC1201-36CD
PTX10000 14.4-Tbps line card without customer support	Perpetual	S-PTX10K-144C-A1/A2-P S-PTX10K-144C-P1/P2-P
PTX10000 14.4-Tbps line card with customer support	Subscription	S-PTX10K-144C-A1/A2-3/5 S-PTX10K-144C-P1/P2-3/5

[Table 15 on page 30](#) describes partner SKUs for the PTX10000 14.4-Tbps line card.

Table 15: PTX10000 14.4-Tbps Line-Card Partner License SKUs

Line Card	License Model	SKU
PTX10000 14.4-Tbps line card with customer support	Subscription	S-PARPTX10K144CA13 S-PARPTX10K144CA23 S-PARPTX10K144CA15 S-PARPTX10K144CA25 S-PARPTX10K144CP13 S-PARPTX10K144CP15 S-PARPTX10K144CP23 S-PARPTX10K144CP25

Table 15: PTX10000 14.4-Tbps Line-Card Partner License SKUs (Continued)

Line Card	License Model	SKU
PTX10001-36MR licenses with customer support	Subscription	S-PAR-PT10K108CA13 S-PAR-PT10K108CA15 S-PAR-PT10K108CA23 S-PAR-PT10K108CA25 S-PAR-PT10K108CP13 S-PAR-PT10K108CP15 S-PAR-PT10K108CP23 S-PAR-PT10K108CP25

[Table 16 on page 31](#) describes SKUs for the PTX10001-36MR.

Table 16: PTX10001-36MR License SKUs

Line Card	License Model	SKU
PTX10001-36MR	Perpetual	PTX10001-36MR-AC PTX10001-36MR-DC
PTX10001-36MR licenses without customer support	Perpetual	S-PTX10K-108C-A1/A2-P S-PTX10K-108C-P1/P2-P
PTX10001-36MR licenses with customer support	Subscription	S-PTX10K-108C-A1/A2-3/5 S-PTX10K-108C-P1/P2-3/5

[Table 17 on page 31](#) describes SKUs for the PTX10003.

Table 17: PTX10003 License SKUs

Line Card	License Model	SKU
PTX10003	Perpetual	PTX10003-160C-AC PTX10003-160C-DC PTX10003-80C-AC PTX10003-80C-DC

Table 17: PTX10003 License SKUs (Continued)

Line Card	License Model	SKU
PTX10003 licenses without customer support	Perpetual	S-PTX10K3-16T-A1/A2-P S-PTX10K3-16T-P1/P2-P S-PTX10K3-8T-A1/A2-P S-PTX10K3-8T-P1/P2-P
PTX10003 licenses with customer support	Subscription	S-PTX10K3-16T-A1/A2-3/5 S-PTX10K3-16T-P1/P2-3/5 S-PTX10K3-8T-A1/A2-3/5 S-PTX10K3-8T-P1/P2-3/5

[Table 18 on page 32](#) defines the parts of a PTX10000 SKU definition.

Table 18: PTX10000 SKU Definition

SKU	SKU Character Description
S-PTX10K-144C/108C-A1/A2/P1/P2-P	S —Software
S-PTX10K-144C/108C-A1/A2/P1/P2-3/5	PTX10K —Product name: PTX10000 line of routers
S-PARPTX10K144CA1/A2/P1/P2/3/5	144C —14.4 Tbps
S-PAR-PT10K108CA1/A2/P1/P2/3/5	108C —10.8 Tbps
	PAR —Partner
	A1/A2 —Advanced 1 or advanced 2 software features
	P1/P2 —Premium 1 or premium 2 software features
	3/5 —Subscription term 3 or 5 years

Table 18: PTX10000 SKU Definition (*Continued*)

SKU	SKU Character Description
S-PTX10K3-16T/8T-A1/A2/P1/P2-P/3/5	<p>S—Software</p> <p>PTX10K3—Product name: PTX10003 line of routers</p> <p>16T—16 Tbps</p> <p>8T—8 Tbps</p> <p>A1/A2—Advanced 1 or advanced 2 software features</p> <p>P1/P2—Premium 1 or premium 2 software features</p> <p>P—Perpetual license</p> <p>3/5—Subscription term 3 or 5 years</p>

Flex Software License for vBNG Routers

IN THIS SECTION

- [vBNG | 33](#)

vBNG

Table 1 describes the licensing support for the vBNG.

vBNG on page 34 shows vBNG features for Flex Software License Model.

Figure 7: vBNG

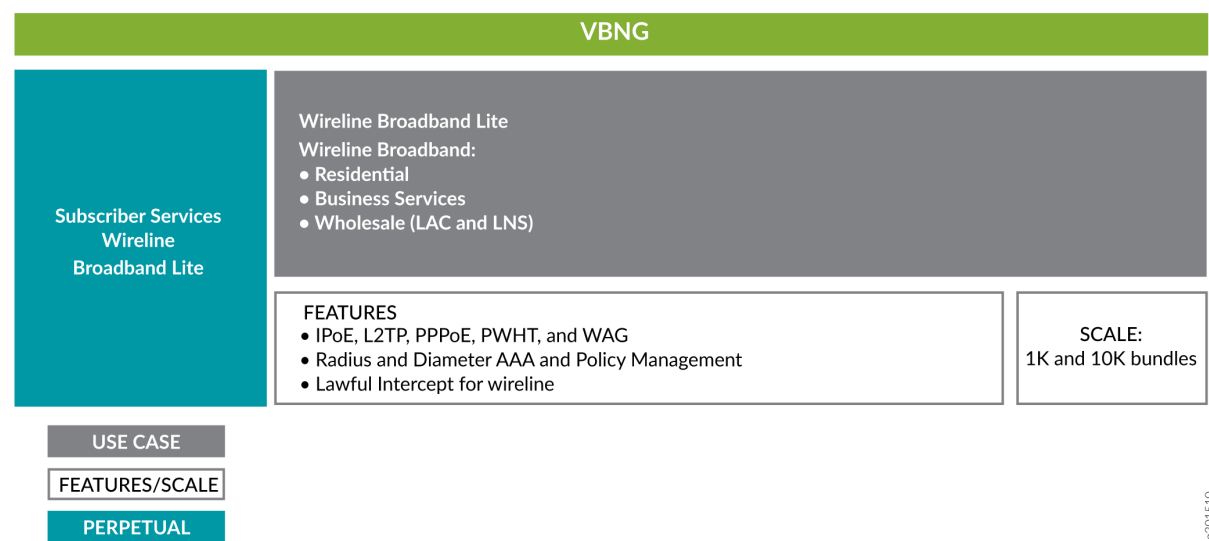


Table 19: Supported Features on vBNG

License Model	Use Cases	Feature Package Description	Platforms
Subscriber Services Wireline Broadband Lite	<p>Wireline Broadband:</p> <ul style="list-style-type: none">• Residential• Business Services• Wholesale (LAC and LNS) <p>Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), quality of service or QoS (Layer 2 and Layer 3), SNMP, and VLAN</p>	<p>IPoE, L2TP, PPPoE, PWHT, and WAG</p> <p>Radius and Diameter AAA and Policy Management</p> <p>Lawful Intercept for wireline</p>	vMX

Table 2 describes license SKUs for vBNG Routers.

Table 20: vBNG license SKUs

License Model	SKUs
S-PTX10K100GMSEC-P	100-Gigabit Ethernet MACsec license; can be applied to one 100-Gigabit Ethernet port or two 40-Gigabit Ethernet ports
S-PTX10K400GMSEC-P	400-Gigabit Ethernet MACsec license; can be applied to one 400-Gigabit Ethernet port or four 100-Gigabit Ethernet ports

Flex Software License for vMX Routers

vMX

[Figure 8 on page 36](#) shows vMX features for Flex Software License Model.

Table 1 describes the licensing support for the vMX routers.

Figure 8: vMX

SUBSCRIPTION	Premium: Services	
	<div>Premium Software License (Includes Customer Support)</div> <div>Features:<ul style="list-style-type: none">Includes advanced featuresHigh scale IP-VPNsPWHT for Layer 3 VPNs or BNGInline NAT and inline MDI1:1 inline J-Flow</div> <div>Scale: 32+ IP VPNs 8+ multicast VPNs</div>	
USE CASE	Advanced: Transport	
	<div>Advanced Software License (Includes Customer Support)</div> <div>Features:<ul style="list-style-type: none">IP routing, IGP (OSFP and IS-IS), IP-FRR, PIM variants, and IGMPInternet eBGP peering, BGP multihoming (add path and multi-path), EPE, and BGP PICBGP Flow specificationAll Layer 2 services—E-LINE (Layer 2 VPNs, Layer 2 ckt, EVPN VPWS, EVPN FXC), E-LAN (bridging, H-VPLS, EVPN, and IRB), E-TREE (H-VPLS, EVPN, and IRB), Layer 2 multicast (snooping included)MPLS transport—LDP and RSVP-TEStreaming telemetry and SNMPPolicers, J-Flow (sampled), sFlow, port mirroring, and per VLAN queuingOAM — BFD, Ethernet CFM or LFM, MPLS or SR (ping and traceroute), services OAM, RPM, and TWAMP</div> <div>Scale: 32 IP VPNs – all address families 8 next-generation MVPN</div>	
FEATURES		

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Table 21: Supported Features on vMX Routers

License Model	Use Cases Examples or Solutions	Feature Package Description	Platforms
Advanced	<p>Transport</p> <p>Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), quality of service or QoS (Layer 2 and Layer 3), SNMP, and VLAN</p>	<ul style="list-style-type: none"> • IP routing, IGP (OSFP and IS-IS), IP fast-route, PIM variants, and IGMP • Internet eBGP peering, BGP multihoming (add path and multi-path), EPE, and BGP Prefix-Independent Convergence (PIC) • BGP Flow Specification • All Layer 2 services—E-LINE (Layer 2 VPNs, Layer 2 circuit, EVPN-VPWS, EVPN-FXC), E-LAN (bridging, H-VPLS, EVPN, and IRB), E-Tree (H-VPLS, EVPN, and IRB), Layer 2 multicast (snooping included) • MPLS transport—LDP and RSVP-TE • Streaming telemetry and SNMP • Policers, J-Flow (sampled), sFlow, port mirroring, and per VLAN queuing • OAM — BFD, Ethernet CFM or LFM, MPLS or SR (ping and traceroute), 	vMX

Table 21: Supported Features on vMX Routers *(Continued)*

License Model	Use Cases	Feature Package Description	Platforms
	Examples or Solutions		
		<p>services OAM, RPM, and TWAMP</p> <p>The Junos Fusion Technology feature requires an additional license in addition to Advanced license.</p>	
Premium	Services	<ul style="list-style-type: none"> • Includes Advanced features • High scale IP VPNs • PWHT for Layer 3 VPNs or BNG • Inline NAT and inline MDI • 1:1 inline J-Flow <p>The subscriber management (BNG or CUPS) feature requires an additional license in addition to Premium license.</p>	

Flex Software License Model are based on large functional blocks. Features that are not explicitly listed in Premium license are included in Advanced license, except for the following:

- Junos Fusion Technology requires additional license in addition to Advanced or Premium license.
- Premium software tier is a prerequisite for running subscriber services (BNG(PL), BNG CUPS, MX Mobile User Plane (SAEGW-U, 5G AGF or UPF)).

Table 2 describes license SKUs for vMX Routers.

Table 22: vMX and MX Series 3D Universal Edge Routers SKUs

Product Model	License Model	SKUs
vMX	Advanced	S-VMX-100G-A-P
		S-VMX-40G-A-P
		S-VMX-10G-A-P
		S-VMX-1G-A-P
		S-VMX-100M-A-P
		S-VMX-250M-A-P
		S-VMX-250M-A-P
		S-VMX-5G-A-P
vMX	Premium	S-VMX-100G-P-P
		S-VMX-40G-P-P
		S-VMX-10G-P-P
		S-VMX-5G-P-P
		S-VMX-1G-P-P
		S-VMX-500M-P-P
		S-VMX-250M-P-P
		S-VMX-100M-P-P

CHAPTER 3

Flex Software License for Switching Devices

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Flex Software License for EX Series Switches

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EX2300, EX3400, and EX4300

EX2300, EX3400, EX4300 series switches support Flex Software License Model as well as the [non-Flex Software License Model](#).

EX Flex License Model

The Flex License Model supports both Flex Subscription and Flex Perpetual licenses. It is a Three-Tier licensing model. The tiers are Standard, Advanced, and Premium.

Premium license includes Junos features which are offered in the Advanced license.

The Advanced and Premium licenses 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.

Customer support for Advanced and Premium Licenses is included with EX hardware support SKUs.

EX2300, EX3400, EX4300, and EX4400 for Flex Software Subscription License Model

EX Flex Subscription licenses are offered for one year, three year, and five year terms. In addition to Junos features, the Flex Advanced and Premium subscription licenses include Juniper Mist Wired Assurance and VNA or Marvis subscriptions.

Flex Advanced and Premium Subscription licenses allow license portability across EX2300, EX3400, EX4300, and EX4400 for the same Tier and Class of switches.

The following statements are applicable to EX2300, EX3400, EX4300, and EX4400 for flex software subscription model licensing without customer support:

- Flex software subscription Advanced and Premium licenses include **Wired Assurance** and **Virtual Network Assistant (Marvis)** subscription.
- Flex Premium subscription license includes Junos features which are offered in the Advanced Subscription license.
- Flex subscription licenses are portable across EX2300, EX3400, EX4300, and EX4400 for the same Tier and Class of switches.
- In a Virtual Chassis (VC) deployment, every VC member requires a Flex subscription feature license
- There are no separate support SKUs for EX Flex Subscription licenses. Support for Advanced and Premium subscription licenses must include some level of EX hardware support SKUs, like CORE or Next Day or Same Day, and so on.

Flex Advanced and Premium subscription licenses are offered with and without EX hardware customer support.

Table 23: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs with SVC CORE or Next Day or Same Day hardware customer support

EX Series Product Class	EX Device Models	Subscription SKUs
Class 1	EX2300-C-12P EX2300-C-12P-TAA EX2300-C-12P-VC EX2300-C-12T EX2300-C-12T-TAA EX2300-C-12T-VC	S-EX-A-C1-1-COR S-EX-A-C1-3-COR S-EX-A-C1-5-COR S-EX-A-C1-1-ND S-EX-A-C1-3-ND S-EX-A-C1-5-ND S-EX-A-C1-1-SD S-EX-A-C1-3-SD S-EX-A-C1-5-SD
Class 2	EX2300-24MP EX2300-24P EX2300-24P-TAA EX2300-24P-VC EX2300-24T EX2300-24T-DC EX2300-24T-TAA EX2300-24T-VC EX2300-24MP-TAA	S-EX-A-C2-1-COR S-EX-A-C2-3-COR S-EX-A-C2-5-COR S-EX-A-C2-1-ND S-EX-A-C2-3-ND S-EX-A-C2-5-ND S-EX-A-C2-1-SD S-EX-A-C2-3-SD S-EX-A-C2-5-SD

Table 23: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs with SVC CORE or Next Day or Same Day hardware customer support (*Continued*)

EX Series Product Class	EX Device Models	Subscription SKUs
	EX3400-24P	S-EX-A-C2-1-COR
	EX3400-24P-TAA	S-EX-A-C2-3-COR
	EX3400-24T	S-EX-A-C2-5-COR
	EX3400-24T-DC	S-EX-A-C2-1-ND
	EX3400-24T-TAA	S-EX-A-C2-3-ND
	EX4300-24P	S-EX-A-C2-5-ND
	EX4300-24T	S-EX-A-C2-1-SD
	EX4400-24P	S-EX-A-C2-3-SD
	EX4400-24P-TAA	S-EX-A-C2-5-SD
	EX4400-24T	
	EX4400-24T-AFI	
	EX4400-24T-AFI-TAA	
	EX4400-24T-DC	
	EX4400-24T-DC-AFI	
	EX4400-24T-DC-TAA	
	EX4400-24T-TAA	
	EX4400-24MP	
Class 3	EX2300-48MP	S-EX-A-C3-1-COR
	EX2300-48P	S-EX-A-C3-3-COR
	EX2300-48P-TAA	S-EX-A-C3-5-COR
	EX2300-48P-VC	S-EX-A-C3-1-ND
	EX2300-48T	S-EX-A-C3-3-ND
	EX2300-48T-TAA	S-EX-A-C3-5-ND
	EX2300-48T-VC	S-EX-A-C3-1-SD
	EX2300-48MP-TAA	S-EX-A-C3-3-SD
		S-EX-A-C3-5-SD

Table 23: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs with SVC CORE or Next Day or Same Day hardware customer support (*Continued*)

EX Series Product Class	EX Device Models	Subscription SKUs
	EX3400-48P	S-EX-A-C3-1-COR
	EX3400-48P-TAA	S-EX-A-C3-3-COR
	EX3400-48T	S-EX-A-C3-5-COR
	EX3400-48T-AFI	S-EX-A-C3-1-ND
	EX3400-48T-AFI-TAA	S-EX-A-C3-3-ND
	EX3400-48T-TAA	S-EX-A-C3-5-ND
	EX4300-32F	S-EX-A-C3-1-SD
	EX4300-48MP	S-EX-A-C3-3-SD
	EX4300-48P	S-EX-A-C3-5-SD
	EX4300-48T-AFI	
	EX4300-48T-DC	
	EX4400-48F	
	EX4400-48F-AFI	
	EX4400-48F-AFI-TAA	
	EX4400-48F-DC	
	EX4400-48F-DC-AFI	
	EX4400-48F-DC-TAA	
	EX4400-48F-TAA	
	EX4400-48P	
	EX4400-48P-TAA	
	EX4400-48T	
	EX4400-48T-AFI	
	EX4400-48T-AFI-TAA	
	EX4400-48T-DC	
	EX4400-48T-DC-AFI	
	EX4400-48T-DC-TAA	
	EX4400-48T-TAA	
	EX4400-48MP	
	EX4300-48MP-TAA	

Table 24: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs without customer support

EX Series Product Class	EX Device Models	Subscription SKUs
Class 1	EX2300-C-12P EX2300-C-12P-TAA EX2300-C-12P-VC EX2300-C-12T EX2300-C-12T-TAA EX2300-C-12T-VC	S-EX-A-C1-1 S-EX-A-C1-3 S-EX-A-C1-5
Class 2	EX2300-24MP-TAA EX2300-24MP EX2300-24P EX2300-24P-TAA EX2300-24P-VC EX2300-24T EX2300-24T-DC EX2300-24T-TAA EX2300-24T-VC	S-EX-A-C2-1 S-EX-A-C2-3 S-EX-A-C2-5
	EX3400-24P EX3400-24P-TAA EX3400-24T EX3400-24T-DC EX3400-24T-TAA EX4300-24P EX4300-24T EX4400-24P EX4400-24P-TAA EX4400-24T EX4400-24T-AFI EX4400-24T-AFI-TAA EX4400-24T-DC EX4400-24T-DC-AFI EX4400-24T-DC-TAA EX4400-24T-TAA EX4400-24MP	S-EX-P-C2-1 S-EX-P-C2-3 S-EX-P-C2-5

Table 24: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs without customer support (*Continued*)

EX Series Product Class	EX Device Models	Subscription SKUs
Class 3	EX2300-48MP EX2300-48P EX2300-48P-TAA EX2300-48P-VC EX2300-48T EX2300-48T-TAA EX2300-48T-VC EX2300-48MP-TAA	S-EX-A-C3-1 S-EX-A-C3-3 S-EX-A-C3-5

Table 24: EX2300, EX3400, EX4300, and EX4400 switch device class and subscription SKUs without customer support (*Continued*)

EX Series Product Class	EX Device Models	Subscription SKUs
	EX3400-48P	S-EX-P-C3-1
	EX3400-48P-TAA	S-EX-P-C3-3
	EX3400-48T	S-EX-P-C3-5
	EX3400-48T-AFI	
	EX3400-48T-AFI-TAA	
	EX3400-48T-TAA	
	EX4300-32F	
	EX4300-48MP	
	EX4300-48P	
	EX4300-48T-AFI	
	EX4300-48T-DC	
	EX4400-48F	
	EX4400-48F-AFI	
	EX4400-48F-AFI-TAA	
	EX4400-48F-DC	
	EX4400-48F-DC-AFI	
	EX4400-48F-DC-TAA	
	EX4400-48F-TAA	
	EX4400-48P	
	EX4400-48P-TAA	
	EX4400-48T	
	EX4400-48T-AFI	
	EX4400-48T-AFI-TAA	
	EX4400-48T-DC	
	EX4400-48T-DC-AFI	
	EX4400-48T-DC-TAA	
	EX4400-48T-TAA	
	EX4400-48MP	
	EX4300-48MP-TAA	

EX2300, EX3400, EX4300, and EX4400 Flex Software Perpetual License Model

EX Flex Advanced and Premium perpetual licenses includes Junos features only. They *do not* include **Juniper Mist Wired Assurance** subscription.

The following statements are applicable to EX2300, EX3400, EX4300, and EX4400 Flex Perpetual licensing model:

- On EX4400 switch, the flow-based telemetry and MACsec features are supported. A separate license is required to use these features.
 - Use the S-EX-FBT-P license SKU for flow-based telemetry feature.
 - Use the S-EX-MACSEC-C2-P and S-EX-MACSEC-C3-P for MACsec feature.
 - In a Virtual Chassis deployment, a separate license is required for each member where the MACsec or flow-based telemetry functionality is configured.
- Flex Perpetual Advanced and Premium licenses *do not* include **Juniper Mist Wired Assurance** and VNA (Marvis) subscription.
- Flex Premium perpetual license includes Junos features which are offered in the Advanced perpetual license.
- Flex Perpetual licenses are not portable. Licenses are tied to the serial number of the EX chassis.
- In a Virtual Chassis (VC) deployment, each VC member requires a Flex perpetual feature license
- There are no separate support SKUs for EX Flex perpetual licenses. Support for Advanced and Premium Flex perpetual licenses is included with EX hardware support SKUs.

Table 25: EX2300, EX3400, EX4300, and EX4400 switch device class and SKUs

EX Series Product Class	EX Device Models	Perpetual SKUs
Class 1	EX2300-C-12P EX2300-C-12P-TAA EX2300-C-12P-VC EX2300-C-12T EX2300-C-12T-TAA EX2300-C-12T-VC	S-EX-A-C1-P

Table 25: EX2300, EX3400, EX4300, and EX4400 switch device class and SKUs *(Continued)*

EX Series Product Class	EX Device Models	Perpetual SKUs
Class 2	EX2300-24MP-TAA EX2300-24MP EX2300-24P EX2300-24P-TAA EX2300-24P-VC EX2300-24T EX2300-24T-DC EX2300-24T-TAA EX2300-24T-VC	S-EX-A-C2-P
	EX3400-24P EX3400-24P-TAA EX3400-24T EX3400-24T-DC EX3400-24T-TAA EX4300-24P EX4300-24T EX4400-24P EX4400-24P-TAA EX4400-24T EX4400-24T-AFI EX4400-24T-AFI-TAA EX4400-24T-DC EX4400-24T-DC-AFI EX4400-24T-DC-TAA EX4400-24T-TAA EX4400-24MP	S-EX-A-C2-P S-EX-P-C2-P
Class 3	EX2300-48MP EX2300-48P EX2300-48P-TAA EX2300-48P-VC EX2300-48T EX2300-48T-TAA EX2300-48T-VC EX2300-48MP-TAA	S-EX-A-C3-P

Table 25: EX2300, EX3400, EX4300, and EX4400 switch device class and SKUs *(Continued)*

EX Series Product Class	EX Device Models	Perpetual SKUs
	EX3400-48P	S-EX-A-C3-P
	EX3400-48P-TAA	S-EX-P-C3-P
	EX3400-48T	
	EX3400-48T-AFI	
	EX3400-48T-AFI-TAA	
	EX3400-48T-TAA	
	EX4300-32F	
	EX4300-48MP	
	EX4300-48P	
	EX4300-48T-AFI	
	EX4300-48T-DC	
	EX4400-48F	
	EX4400-48F-AFI	
	EX4400-48F-AFI-TAA	
	EX4400-48F-DC	
	EX4400-48F-DC-AFI	
	EX4400-48F-DC-TAA	
	EX4400-48F-TAA	
	EX4400-48P	
	EX4400-48P-TAA	
	EX4400-48T	
	EX4400-48T-AFI	
	EX4400-48T-AFI-TAA	
	EX4400-48T-DC	
	EX4400-48T-DC-AFI	
	EX4400-48T-DC-TAA	
	EX4400-48T-TAA	
	EX4400-48MP	
	EX4300-48MP-TAA	

Junos OS features support for Flex Licenses

Junos OS features to Flex License mapping on EX2300 series switches

On EX2300 switches, the following Junos OS features are supported by installing a Flex Standard and Advanced license.

Figure 9 on page 51 shows EX2300 switches features.

Figure 9: Licensed Features on EX2300 switches

Advanced License	Advanced: Campus and Access Layer 2 or Layer 3
	Bidirectional Forwarding Detection (BFD), IGMP version 1, IGMP version 2, IGMP version 3, IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRP version 3, Multicast Source Discovery protocol (MSDP), OAM and Maintenance CFM, OSPF version 2 or OSPF version 3, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), and VRRP
Standard License	Standard: Campus and Access Layer 2 or Layer 3
	Layer 2 and Layer 3 filters, Layer 2 (xSTP, 802.1Q, and LAG), Layer 2 and Layer 3 QoS, Layer 3 (static), IGMP snooping, Operation, Administration, and Maintenance (OAM) link fault management (LFM), Q-in-Q, sFlow, SNMP, Junos telemetry interface (JTI), and Virtual Chassis* Virtual Chassis*—We've included Virtual Chassis license in the Standard license model on EX2300-C 12-port switches. However, we don't include the Virtual Chassis license on EX2300 24-port and 48-port switch models. You need to purchase the license separately.
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Table 26 on page 52 describes the licensing support for soft enforced features on EX2300 switches.

Table 26: Licensed Features on EX2300 switches

License Model	Use Case Examples or Solutions	Feature List
Standard	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Layer 2 and Layer 3 filters • Layer 2 (xSTP, 802.1Q, and LAG) • Layer 2 and Layer 3 QoS • Layer 3 (static) • IGMP snooping • Operation, Administration, and Maintenance (OAM) link fault management (LFM) • Q-in-Q • sFlow • SNMP • Junos telemetry interface (JTI) • Virtual Chassis*

Table 26: Licensed Features on EX2300 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Advanced	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • IGMP version 1, IGMP version 2, and IGMP version 3 • IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRP version 3 • Multicast Source Discovery protocol (MSDP) • OAM and Maintenance CFM • OSPF version 2 or OSPF version 3 • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • VRRP

Virtual Chassis*—We've included Virtual Chassis license in the Standard license model on EX2300-C 12-port switches. However, we don't include the Virtual Chassis license on EX2300 24-port and 48-port switch models. You need to purchase the license separately.

Junos OS features to Flex License mapping on EX3400 series switches

On EX3400 switches, the following Junos OS features are supported by installing a Flex Advanced and Premium license.

Figure 10 on page 54 shows EX3400 switches features.

Figure 10: Licensed Features on EX3400 switches

Premium License	Premium: Campus and Access Layer 3
	Bidirectional Forwarding Detection (BFD), IGMP version 1, IGMP version 2, IGMP version 3, IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRPv3, virtual router support for unicast, FBF, Multicast Source Discovery Protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, VRRP, BGP and multiprotocol BGP (MBGP), and IS-IS
Advanced License	Advanced: Campus and Access Layer 2 or Layer 3
	Bidirectional Forwarding Detection (BFD), IGMP version 1, IGMP version 2, IGMP version 3, IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRP version 3, and virtual router support for unicast, Filter-based forwarding (FBF), Multicast Source Discovery protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, and VRRP
Standard License	Standard: Campus and Access Layer 2 or Layer 3
	Layer 2 and Layer 3 filters, Layer 2 (xSTP, 802.1Q, and LAG), Layer 2 and Layer 3 QoS, Layer 3 (static), IGMP snooping, Operations, Administration, and Maintenance (OAM) link fault management (LFM), Q-in-Q, sFlow, SNMP, Junos telemetry interface (JTI), and Virtual Chassis

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Table 27 on page 55 describes the licensing support for soft enforced features on EX3400 switches.

Table 27: Licensed Features on EX3400 switches

License Model	Use Case Examples or Solutions	Feature List
Standard	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none">• Layer 2 and Layer 3 filters• Layer 2 (xSTP, 802.1Q, and LAG)• Layer 2 and Layer 3 QoS• Layer 3 (static)• IGMP snooping• Operations, Administration, and Maintenance (OAM) link fault management (LFM)• Q-in-Q• sFlow• SNMP• Junos telemetry interface (JTI)• Virtual Chassis

Table 27: Licensed Features on EX3400 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Advanced	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • IGMP version 1, IGMP version 2, and IGMP version 3 • IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRP version 3, and virtual router support for unicast • Filter-based forwarding (FBF) • Multicast Source Discovery protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP

Table 27: Licensed Features on EX3400 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Premium	Campus and access Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • IGMP version 1, IGMP version 2, and IGMP version 3 • IPv6 routing protocols: Multicast Listener Discovery (MLD) version 1 and MLD version 2, OSPF version 3, PIM multicast, VRRPv3, virtual router support for unicast, and FBF • Multicast Source Discovery Protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP • BGP and multiprotocol BGP (MBGP) • IS-IS

Junos OS features to Flex License mapping on EX4300 series switches

On EX4300 switches, the following Junos OS features are supported by installing a Flex Advanced and Premium license.

Figure 11 on page 58 shows EX4300 switches features.

Figure 11: Licensed Features on EX4300 switches

Premium License	<div>Premium: Campus and Access Layer 3</div> <div>Bidirectional Forwarding Detection (BFD), CFM (IEEE 802.1ag), IGMP version 1, IGMP version 2, IGMP version 3, Multicast Source Discovery Protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, FBF, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, VRRP, BGP and multiprotocol BGP (MBGP), IS-IS, and EVPN-VXLAN (supported only on EX4300-48MP switch and requires the BGP for configuration.)</div>
Advanced License	<div>Advanced: Campus and Access Layer 2 or Layer 3</div> <div>Bidirectional Forwarding Detection (BFD), IGMP version 1, IGMP version 2, IGMP version 3, Multicast Source Discovery protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, FBF, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, and VRRP</div>
Standard License	<div>Standard: Campus and Access Layer 2 or Layer 3</div> <div>Layer 2 and Layer 3 filters, Layer 2 (xSTP, 802.1Q, and LAG), Layer 2 and Layer 3 QoS, Layer 3 (static), IGMP snooping, Operations, Administration, and Maintenance (OAM) link fault management (LFM), Q-in-Q, sFlow, SNMP, Junos telemetry interface (JTI), and Virtual Chassis</div>

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Table 28 on page 59 describes the licensing support for soft enforced features on EX4300 switches.

Table 28: Licensed Features on EX4300 switches

License Model	Use Case Examples or Solutions	Feature List
Standard	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Layer 2 and Layer 3 filters • Layer 2 (xSTP, 802.1Q, and LAG) • Layer 2 and Layer 3 QoS • Layer 3 (static) • IGMP snooping • Operations, Administration, and Maintenance (OAM) link fault management (LFM) • Q-in-Q • sFlow • SNMP • Junos telemetry interface (JTI) • Virtual Chassis

Table 28: Licensed Features on EX4300 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Advanced	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • IGMP version 1, IGMP version 2, and IGMP version 3 • Multicast Source Discovery protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • FBF • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP

Table 28: Licensed Features on EX4300 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Premium	Campus and access Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • CFM (IEEE 802.1ag) • IGMP version 1, IGMP version 2, and IGMP version 3 • Multicast Source Discovery Protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • FBF • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP • BGP and multiprotocol BGP (MBGP) • IS-IS • EVPN-VXLAN <ul style="list-style-type: none"> • Supported only on EX4300-48MP switch. • Requires the BGP for configuration.

Junos OS features to Flex License mapping on EX4400 series switches

On EX4400 switches, the following Junos OS features are supported by installing a Flex Advanced and Premium license.

Figure 12 on page 62 shows EX4400 switches features.

Figure 12: Licensed Features on EX4400 switches

Premium License	<div>Premium: Campus and Access Layer 3</div> <div>Bidirectional Forwarding Detection (BFD), CFM (IEEE 802.1ag), IGMP version 1, IGMP version 2, IGMP version 3, Multicast Source Discovery Protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, FBF, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, VRRP, BGP and multiprotocol BGP (MBGP), IS-IS, EVPN-VXLAN (requires the BGP for configuration)</div>
Advanced License	<div>Advanced: Campus and Access Layer 2 or Layer 3</div> <div>Bidirectional Forwarding Detection (BFD), IGMP version 1, IGMP version 2, IGMP version 3, Multicast Source Discovery protocol (MSDP), OAM CFM, OSPF version 2 or OSPF version 3, FBF, Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode, Real-time performance monitoring (RPM), RIP IPv6 (RIPng), Unicast reverse-path forwarding (unicast RPF), Virtual router, and VRRP</div>
Standard License	<div>Standard: Campus and Access Layer 2 or Layer 3</div> <div>Layer 2 and Layer 3 filters, Layer 2 (xSTP, 802.1Q, and LAG), Layer 2 and Layer 3 QoS, Layer 3 (static), IGMP snooping, Operations, Administration, and Maintenance (OAM) link fault management (LFM), Q-in-Q, sFlow, SNMP, Junos telemetry interface (JTI), and Virtual Chassis</div>

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Table 29 on page 63 describes the licensing support for soft enforced features on EX4400 switches.

Table 29: Licensed Features on EX4400 switches

License Model	Use Case Examples or Solutions	Feature List
Standard	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Layer 2 and Layer 3 filters • Layer 2 (xSTP, 802.1Q, and LAG) • Layer 2 and Layer 3 QoS • Layer 3 (static) • IGMP snooping • Operations, Administration, and Maintenance (OAM) link fault management (LFM) • Q-in-Q • sFlow • SNMP • Junos telemetry interface (JTI) • Virtual Chassis

Table 29: Licensed Features on EX4400 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Advanced	Campus and access Layer 2 or Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • IGMP version 1, IGMP version 2, and IGMP version 3 • Multicast Source Discovery protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • FBF • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP

Table 29: Licensed Features on EX4400 switches *(Continued)*

License Model	Use Case Examples or Solutions	Feature List
Premium	Campus and access Layer 3	<ul style="list-style-type: none"> • Bidirectional Forwarding Detection (BFD) • CFM (IEEE 802.1ag) • IGMP version 1, IGMP version 2, and IGMP version 3 • Multicast Source Discovery Protocol (MSDP) • OAM CFM • OSPF version 2 or OSPF version 3 • FBF • Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode • Real-time performance monitoring (RPM) • RIP IPv6 (RIPng) • Unicast reverse-path forwarding (unicast RPF) • Virtual router • VRRP • BGP and multiprotocol BGP (MBGP) • IS-IS • EVPN-VXLAN <ul style="list-style-type: none"> • Requires the BGP for configuration.

On EX4400 switch, the flow-based telemetry and MACsec features are hard-enforced. You'll need a license to use these features.

Flex Software License for QFX Series Switches

IN THIS SECTION

- [QFX Switches](#) | 66

QFX Switches

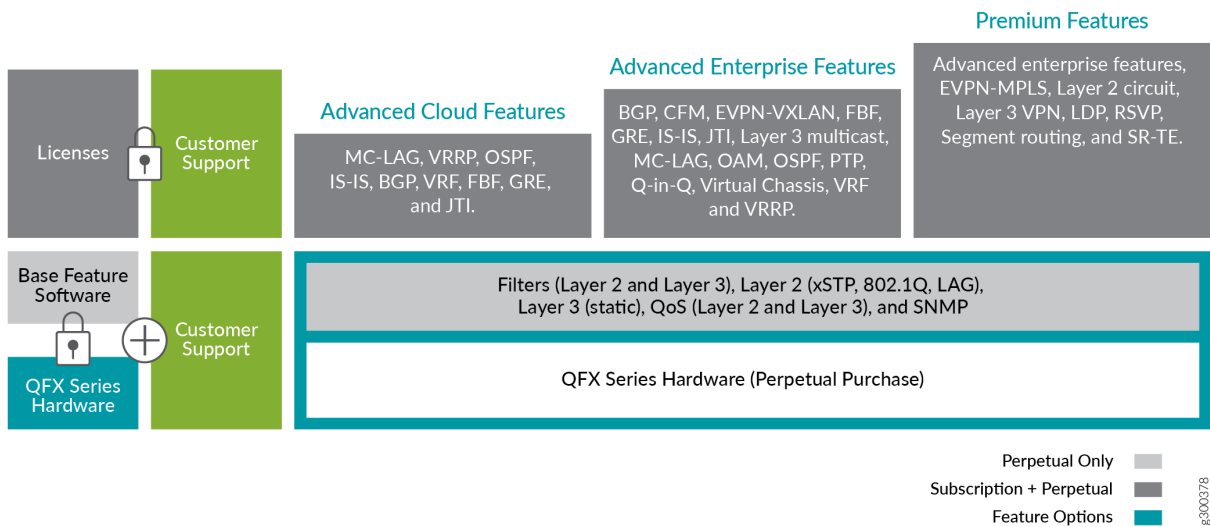
QFX switch models that support the Software Subscription Model:

- QFX5110-48S
- QFX5110-32Q
- QFX5110-48S
- QFX5120-48Y
- QFX5120-48YM
- QFX5120-48T
- QFX5120-32C
- QFX5130-32CD
- QFX5200-32C
- QFX5210-64C
- QFX5220-32CD
- QFX5220-128C
- QFX10002-36Q
- QFX10002-60C
- QFX10002-72Q
- QFX10008
- QFX10016

QFX5110-48S, QFX5110-32Q, QFX5200-32C, QFX5210-64C, and QFX5120-48Y support [non-Flex Software License Models](#) and [Flex Software License Model](#). For example, the QFX5120-48Y supports QFX5120-48Y-AFO and QFX5120-48Y-AFO2, respectively.

[Figure 13 on page 67](#) shows QFX switch features for the Three-Tier (standard, advanced, and premium licenses).

Figure 13: QFX Switch



[Table 30 on page 67](#) describes the licensing support with use case examples for the QFX5110-48S, QFX5110-32Q, QFX5120-48Y, QFX5120-48YM, QFX5120-48T, QFX5120-32C, QFX5130-32CD, QFX5200-32C, QFX5210-64C, QFX5220-32CD, QFX5220-128C, QFX10002-36Q, QFX10002-60C, QFX10002-72Q, QFX10008, and QFX10016 switches.

Table 30: Supported Features on QFX5110-48S, QFX5110-32Q, QFX5120-48Y, QFX5120-48YM, QFX5120-48T, QFX5120-32C, QFX5130-32CD, QFX5200-32C, QFX5210-64C, QFX5220-32CD, QFX5220-128C, QFX10002-36Q, QFX10002-60C, QFX10002-72Q, QFX10008, and QFX10016 switches

QFX Switch License Model	Use Case Examples or Solutions	Detailed Features
Standard	Basic Layer 2 switching or basic Layer 3 forwarding	BFD, Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), QoS (Layer 2 and Layer 3), and SNMP

Table 30: Supported Features on QFX5110-48S, QFX5110-32Q, QFX5120-48Y, QFX5120-48YM, QFX5120-48T, QFX5120-32C, QFX5130-32CD, QFX5200-32C, QFX5210-64C, QFX5220-32CD, QFX5220-128C, QFX10002-36Q, QFX10002-60C, QFX10002-72Q, QFX10008, and QFX10016 switches (Continued)

QFX Switch License Model	Use Case Examples or Solutions	Detailed Features
Advanced	Data center fabric	<p>Advanced 1: Standard features, BGP, IS-IS, FBF, VRRP, MC-LAG, Layer 3 (static), GRE tunnel, OSPF, RIP, and sFlow</p> <p>Advanced 2: Advanced 1 features, CFM, Q-in-Q, VXLAN, PCEP, ESI-LAG, Timing, Ethernet OAM, EVPN-VXLAN, IGMP version 1, IGMP version 2, and IGMP version 3, PIM, MPLS, and Virtual Chassis</p>
Premium	Data center interconnect or data center edge	Advanced 2 features, Layer 3 VPN, LDP, RSVP, Layer 2 circuit, EVPN-MPLS, Segment routing and MACsec

[Table 31 on page 69](#) describes classification of QFX switch device class and SKUs.

Table 31: QFX switch device class and SKUs

QFX 5000 Series Product Class	QFX Device Models	SKUs
Class 1	QFX5110-32Q-AFO2 QFX5110-32Q-AFI2 QFX5110-32Q-D-AFO2 QFX5110-32Q-D-AFI2 QFX5110-48S-AFO2 QFX5110-48S-AFI2 QFX5110-48S-D-AFO2 QFX5110-48S-D-AFI2 QFX5110-48S-AFI-T2 QFX5110-48S-AFO-T2 QFX5120-48Y-AFO2 QFX5120-48Y-AFI2 QFX5120-48Y-D-AFO2 QFX5120-48Y-D-AFI2 QFX5120-48YM-AFO QFX5120-48YM-AFI QFX5120-48YM-DC-AO QFX5120-48YM-DC-AI QFX5120-48T-AFO QFX5120-48T-AFI QFX5120-48T-DC-AFO QFX5120-48T-DC-AFI	S-QFX5K-C1-A1-3 S-QFX5K-C1-A1-5 S-QFX5K-C1-A1-P S-QFX5K-C1-A2-3 S-QFX5K-C1-A2-5 S-QFX5K-C1-A2-P S-QFX5K-C1-P1-3 S-QFX5K-C1-P1-5 S-QFX5K-C1-P1-P
Class 2	QFX5120-32C-AFO QFX5120-32C-AFI QFX5120-32C-AFI-T QFX5120-32C-AFO-T QFX5120-32C-DC-AFO QFX5120-32C-DC-AFI QFX5200-32C-AFO2 QFX5200-32C-AFI2 QFX5200-32C-D-AFO2 QFX5200-32C-D-AFI2 QFX5200-32C-AFO-T2 QFX5200-32C-AFI-T2	S-QFX5K-C2-A1-3 S-QFX5K-C2-A1-5 S-QFX5K-C2-A1-P S-QFX5K-C2-A2-3 S-QFX5K-C2-A2-5 S-QFX5K-C2-A2-P S-QFX5K-C2-P1-3 S-QFX5K-C2-P1-5 S-QFX5K-C2-P1-P

Table 31: QFX switch device class and SKUs *(Continued)*

QFX 5000 Series Product Class	QFX Device Models	SKUs
Class 3	QFX5130-32CD-AFI QFX5130-32CD-AFO QFX5130-32CD-D-AFI QFX5130-32CD-D-AFO QFX5210-64C-AFO2 QFX5210-64C-AFI2 QFX5210-64C-D-AFO2 QFX5210-64C-D-AFI2 QFX5210-64C-AFO-T2 QFX5210-64C-AFI-T2 QFX5220-32CD-AFO QFX5220-32CD-AFI QFX5220-32CD-D-AFO QFX5220-32CD-D-AFI QFX5220-128C-AFO QFX5220-128C-D-AFO	S-QFX5K-C3-A1-3 S-QFX5K-C3-A1-5 S-QFX5K-C3-A1-P S-QFX5K-C3-A2-3 S-QFX5K-C3-A2-5 S-QFX5K-C3-A2-P S-QFX5K-C3-P1-3 S-QFX5K-C3-P1-5 S-QFX5K-C3-P1-P
	QFX10002-36Q	S-QFX10K2-36Q-A2-3 S-QFX10K2-36Q-A2-5 S-QFX10K2-36Q-A2-P S-QFX10K2-36Q-P1-3 S-QFX10K2-36Q-P1-5 S-QFX10K2-36Q-P1-P
	QFX10002-60C	S-QFX10K2-60C-A2-3 S-QFX10K2-60C-A2-5 S-QFX10K2-60C-A2-P S-QFX10K2-60C-P1-3 S-QFX10K2-60C-P1-5 S-QFX10K2-60C-P1-P

Table 31: QFX switch device class and SKUs *(Continued)*

QFX 5000 Series Product Class	QFX Device Models	SKUs
	QFX10002-72Q	S-QFX10K2-72Q-A2-3 S-QFX10K2-72Q-A2-5 S-QFX10K2-72Q-A2-P S-QFX10K2-72Q-P1-3 S-QFX10K2-72Q-P1-5 S-QFX10K2-72Q-P1-P
	QFX10008	S-QFX10K8-A2-3 S-QFX10K8-A2-5 S-QFX10K8-A2-P S-QFX10K8-P1-3 S-QFX10K8-P1-5 S-QFX10K8-P1-P
	QFX10016	S-QFX10K16-A2-3 S-QFX10K16-A2-5 S-QFX10K16-A2-P S-QFX10K16-P1-3 S-QFX10K16-P1-5 S-QFX10K16-P1-P

Flex Software License for Security Devices

IN THIS CHAPTER

- Flex Software License for cSRX | 72
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Flex Software License for cSRX

IN THIS SECTION

- cSRX | 72

cSRX

Flex software license for cSRX is available as a subscription only. The subscription license includes the right-to-use (RTU) the licensed feature level and Juniper Technical Support for the term of the subscription.

Figure 14 on page 73 shows cSRX features.

Figure 14: cSRX

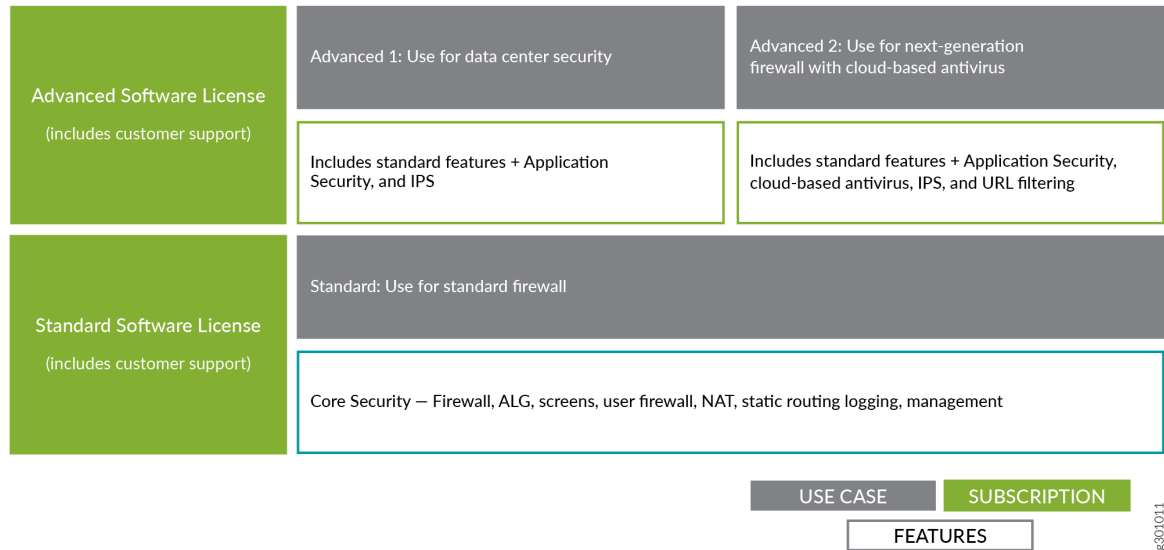


Table 32 on page 73 shows cSRX features for Flex Software License Model.

Table 32: cSRX Flex Software License Model

cSRX License Model	cSRX SKUs	Use Case Examples or Solutions	Detailed Features
Standard	S-CSRX-S-1 S-CSRX-S-3 S-CSRX-S-5	Use for standard firewall	Core security—firewall, ALG, screens, user firewall, NAT, Static routing, logging, management
Advanced	S-CSRX-A1-1 S-CSRX-A1-3 S-CSRX-A1-5	Advanced 1 Use for data center security	Advanced 1 Includes standard features + Application Security, and IPS

Table 32: cSRX Flex Software License Model (*Continued*)

cSRX License Model	cSRX SKUs	Use Case Examples or Solutions	Detailed Features
	S-CSRX-A2-1 S-CSRX-A2-3 S-CSRX-A2-5	Advanced 2 Use for next-generation firewall with cloud based antivirus	Advanced 2 Includes standard features + Application Security, cloud-based antivirus, IPS, and URL filtering

Flex Software License for JATP

IN THIS SECTION

- [JATP400, JATP700, and JATP Appliances](#) | 74

JATP400, JATP700, and JATP Appliances

[Table 33 on page 75](#) describes the support for standard and advanced license models with use case examples for the JATP400, JATP700, and Juniper Networks® Advanced Threat Prevention Appliances (JATP Appliances).

Figure 15 on page 75 shows JATP400, JATP700, and Juniper Advanced Threat Prevention Appliances features for the standard, and advanced licenses.

Figure 15: JATP400, JATP700, and Juniper Advanced Threat Prevention Appliances

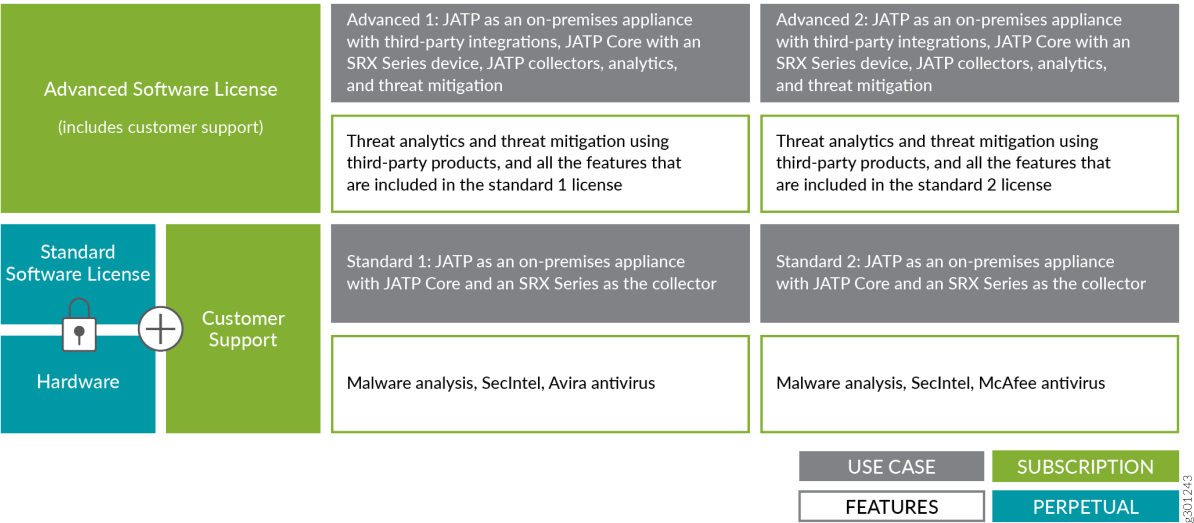


Table 33: Supported Features on the JATP400, JATP700, and JATP Appliances

License Model	Use Case Examples or Solutions	Detailed Features	Bandwidth
Standard 1	JATP as an on-premises appliance with JATP Core and an SRX Series device as the collector	Malware analysis, SecIntel, Avira antivirus	1 Gbps 10 Gbps 100 Mbps 5 Gbps 500 Mbps
Standard 2	JATP as an on-premises appliance with JATP Core and an SRX Series device as the collector	Malware analysis, SecIntel, McAfee antivirus	

Table 33: Supported Features on the JATP400, JATP700, and JATP Appliances (*Continued*)

License Model	Use Case Examples or Solutions	Detailed Features	Bandwidth
Advanced 1	JATP as an on-premises appliance with third-party integrations, JATP Core with an SRX Series, JATP collectors, analytics, and threat mitigation	Threat analytics and threat mitigation using third-party products, and all the features that are included in the standard 1 license	
Advanced 2	JATP as an on-premises appliance with third-party integrations, JATP Core with an SRX Series, JATP collectors, analytics, and threat mitigation	Threat analytics and threat mitigation using third-party products, and all the features that are included in the standard 2 license	

License stacking is allowed. You can combine individual or bundled licenses to combine features or to increase the total throughput that is supplied to the JATP Appliance. For example, you can combine a 5-Gbps license and another 5-Gbps license to supply 10-Gbps throughput to the JATP Appliance.

Flex Software License for SRX Series Devices

IN THIS SECTION

- [SRX Series Services Gateways | 76](#)

SRX Series Services Gateways

Flex Software Subscription Model is supported on SRX300, SRX320, SRX340, SRX345, SRX380, SRX550M, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, and SRX5800 devices.

- SRX300 and SRX320 devices support **Advanced 1**, **Advanced 2** and **Premium 1** license.

- SRX340, SRX345, and SRX380 devices support **Advanced 1, Advanced 2, Premium 1 and Premium 2** license.
- SRX550M device supports only **Advanced 1** license.

Figure 16 on page 77 shows SRX Series Services Gateways features for Flex Software Subscription Model Three-Tier (standard, advanced, and premium licenses).

Figure 16: SRX Series Services Gateways Flex Software Subscription Model

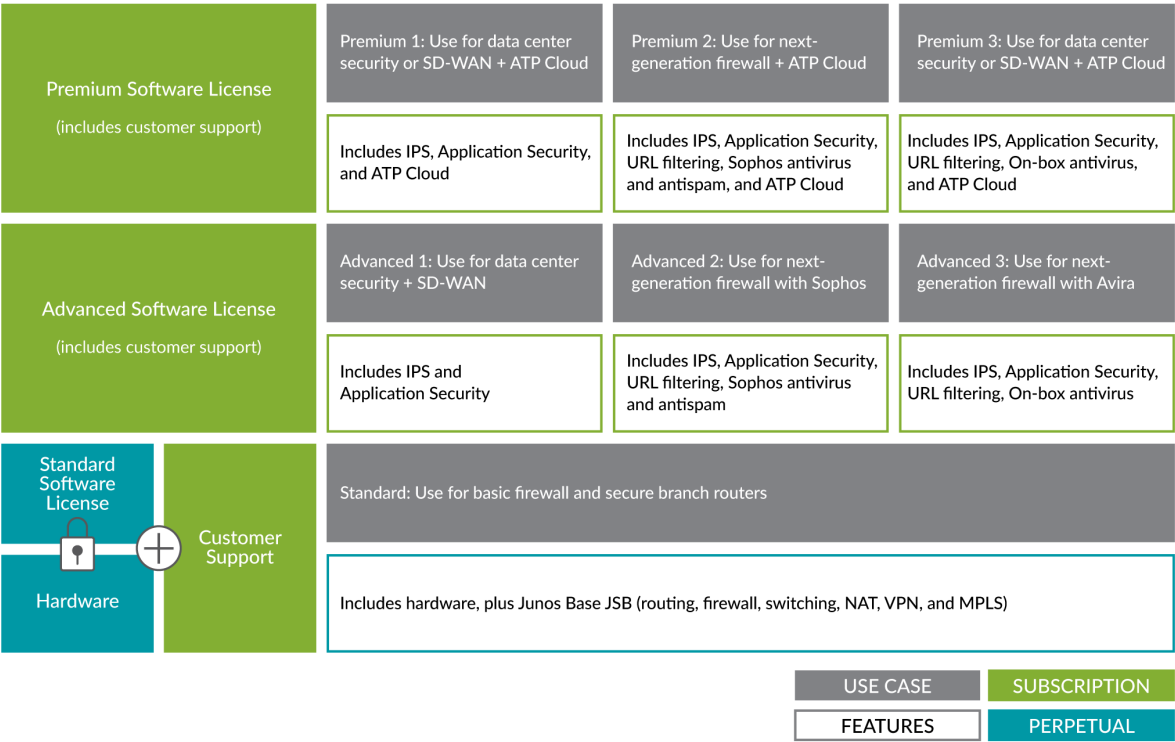


Table 34 on page 78 shows SRX Series Services Gateways features for Flex Software Subscription Model.

Table 34: SRX Series Services Gateways Flex Software Subscription Model

SRX Series Services Gateways License Model	Use Case Examples or Solutions	Detailed Features
Standard	Use for basic firewall and secure branch routers	Includes hardware, plus Junos Base JSB (routing, firewall, switching, NAT, VPN, and MPLS)
Advanced	Advanced 1 Use for data center security + SD-WAN	Advanced 1 Includes IPS and Application Security*
	Advanced 2 Use for next-generation firewall with Sophos	Advanced 2 Includes IPS, Application Security*, URL filtering, Sophos antivirus and antispam
	Advanced 3 Use for next-generation firewall with Avira	Advanced 3 Includes IPS, Application Security*, URL filtering, On-box antivirus
Premium	Premium 1 Use for data center security or SD-WAN + ATP Cloud	Premium 1 Includes IPS, Application Security*, and ATP Cloud
	Premium 2 Use for next-generation firewall + ATP Cloud	Premium 2 Includes IPS, Application Security*, URL filtering, Sophos antivirus and antispam, and ATP Cloud

Table 34: SRX Series Services Gateways Flex Software Subscription Model *(Continued)*

SRX Series Services Gateways License Model	Use Case Examples or Solutions	Detailed Features
	Premium 3 Use for data center security or SD-WAN + ATP Cloud	Premium 3 Includes IPS, Application Security*, URL filtering, On-box antivirus, and ATP Cloud

*Application Security includes Application Firewall (AppFW), Application Quality of Service (AppQoS), Application Tracking (AppTrack), Advanced policy-based routing (APBR), and Application Quality of Experience (AppQoE).

SD-WAN Flex Software Subscription license includes features supported in Junos OS.

Flex Software License for vSRX

IN THIS SECTION

- [vSRX | 79](#)

vSRX

Flex software license for vSRX is available as a subscription only. The subscription license includes the right-to-use (RTU) the licensed feature level and Juniper Technical Support for the term of the subscription.

- vSRX is available with a 60 days built-in trial eval license that expires after 60 days.
- OCI supports Bring Your Own License (BYOL) licensing model. The BYOL license model allows you to customize your license, subscription and support to fit your needs. You can purchase BYOL from Juniper Networks or Juniper Networks authorized reseller.

- To add, delete, and manage licenses, see [Managing Licenses](#).

Figure 17 on page 80 shows vSRX features for Flex Software License Model Three-Tier (standard, advanced, and premium licenses).

Figure 17: vSRX

	USE CASE		
	SUBSCRIPTION		
Premium Software License (includes customer support)	Premium 1: Use for data center security and ATP Cloud	Premium 2: Use for next-generation firewall and ATP Cloud	Premium 3: Use for next-generation firewall and ATP Cloud
	Includes standard and Advanced 1 features, and ATP Cloud	Includes standard and Advanced 2 features, and ATP Cloud	Includes standard and Advanced 3 features, and ATP Cloud
Advanced Software License (includes customer support)	Advanced 1: Use for data center security	Advanced 2: Use for next-generation firewall with cloud-based antivirus	Advanced 3: Use for next-generation firewall with on-box antivirus
	Includes standard features + IPS and Application Security (Application Identification, Application Firewall, Application Quality of Service, and Application Tracking)	Includes standard and Advanced 1 features, Sophos antivirus, Web filtering, Antispam, and content filtering	Includes standard and Advanced 1 features, Avira antivirus, Web filtering, Antispam, and content filtering
Standard Software License (includes customer support)	Standard: Use for standard firewall and secure branch routers		
	ALGs, BGP, Class of Service (CoS), DHCP, diagnostics, firewall, GRE, IP tunneling, IPv4 and IPv6, Jflow, management (J-Web, CLI, and NetConf), MPLS, multicast, NAT, on-box logging, OSPF, screens, site to site VPN, static routing, and user firewall		
FEATURES			

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Table 35 on page 81 shows vSRX features for Flex Software License Model.

Table 35: Licensed Features on vSRX

vSRX License Model	Use Case Examples or Solutions	Number of vCPUs Required	Feature List
Standard	Use for standard firewall and secure branch routers	2, 5, 9, 17, or 32 virtual CPUs (vCPUs)	Application Layer Gateways (ALGs), BGP, class of service (CoS), DHCP, diagnostics, firewall, GRE, IP tunneling, IPv4 and IPv6, J-Flow, management (J-Web, CLI, and NETCONF), MPLS, multicast, NAT, on-box logging, OSPF, screens, site-to-site VPN, static routing, and user firewall
Advanced	Advanced 1 Use for data center security	2, 5, 9, 17, or 32 vCPUs	Includes Standard features plus IPS and application security (application identification, application firewall, application quality of service, and application tracking)
	Advanced 2 Use for next-generation firewall with cloud-based antivirus	2, 5, 9, 17, or 32 vCPUs	Includes Standard and Advanced 1 features, Sophos antivirus, Web filtering, antispam, and content filtering
	Advanced 3 Use for next-generation firewall with on-box antivirus	2, 5, 9, 17, or 32 vCPUs	Includes Standard and Advanced 1 features, Avira antivirus, Web filtering, antispam, and content filtering

Table 35: Licensed Features on vSRX (Continued)

vSRX License Model	Use Case Examples or Solutions	Number of vCPUs Required	Feature List
Premium	Premium 1 Use for data center security and Juniper Advanced Threat Prevention Cloud (Juniper ATP Cloud)	2, 5, 9, 17, or 32 vCPUs	Includes Standard and Advanced 1 features, and Juniper ATP Cloud
	Premium 2 Use for next-generation firewall and Juniper ATP Cloud	2, 5, 9, 17, or 32 vCPUs	Includes Standard and Advanced 2 features, and Juniper ATP Cloud
	Premium 3 Use for next-generation firewall and Juniper ATP Cloud	2,5,9, 17, or 32 vCPUs	Includes Standard and Advanced 3 features, and Juniper ATP Cloud

vSRX Flex Software License Model supports standard, advanced, or premium subscription license. Subscription term is 1 year, 3 years, or 5 years and includes customer support.

For public cloud, vSRX Flex Software License Model supports—Pay-As-You-Go (PAYG) and Bring Your Own License (BYOL) license model. Pricing is based on number of vCPU cores, with a minimum of 2 vCPU cores.

[Table 36 on page 83](#) shows vSRX SKU definition.

Table 36: vSRX SKU Definition

SKU	SKU Character Description
<p><i>S-VSRX-2C/5C/9C/17C-S/A1/A2/A3/P1/P2/P3-1/3/5</i></p> <p>Example:</p> <ul style="list-style-type: none"> • S-VSRX-2C-S-1 • S-VSRX-5C-S-3 • S-VSRX-9C-S-5 • S-VSRX-5C-A1-1 • S-VSRX-17C-A2-3 • S-VSRX-17C-A3-5 • S-VSRX-5C-P1-1 • S-VSRX-17C-P2-3 • S-VSRX-17C-P3-5 	<p>S—Software</p> <p>VSRX—Product name vSRX</p> <p>2C/5C/9C/17C—Number of vCPUs</p> <p>S/A1/A2/A3/P1/P2/P3</p> <ul style="list-style-type: none"> • S = Standard license model • A1 = Advanced 1 license model • A2 = Advanced 2 license model • A3 = Advanced 3 license model • P1 = Premium 1 license model • P2 = Premium 2 license model • P3 = Premium 3 license model <p>1/3/5—Subscription term 1, 3, or 5 years</p>

Flex Software License for Network Management and Operations

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- HealthBot Licensing | 88
- Flex Software License for NFX | 95
- Flex Software License for Northstar Controller | 97
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Flex Software License for Contrail

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- Contrail Service Orchestration | 84

Contrail Service Orchestration

[Table 37 on page 86](#) describes the standard and advance license model support with use case examples for the Contrail Service Orchestration (CSO) software. [Table 38 on page 87](#) lists the supported devices categorized into device classes.

Figure 18 on page 85 shows CSO features for the standard and advanced licenses.

Figure 18: Contrail Service Orchestration

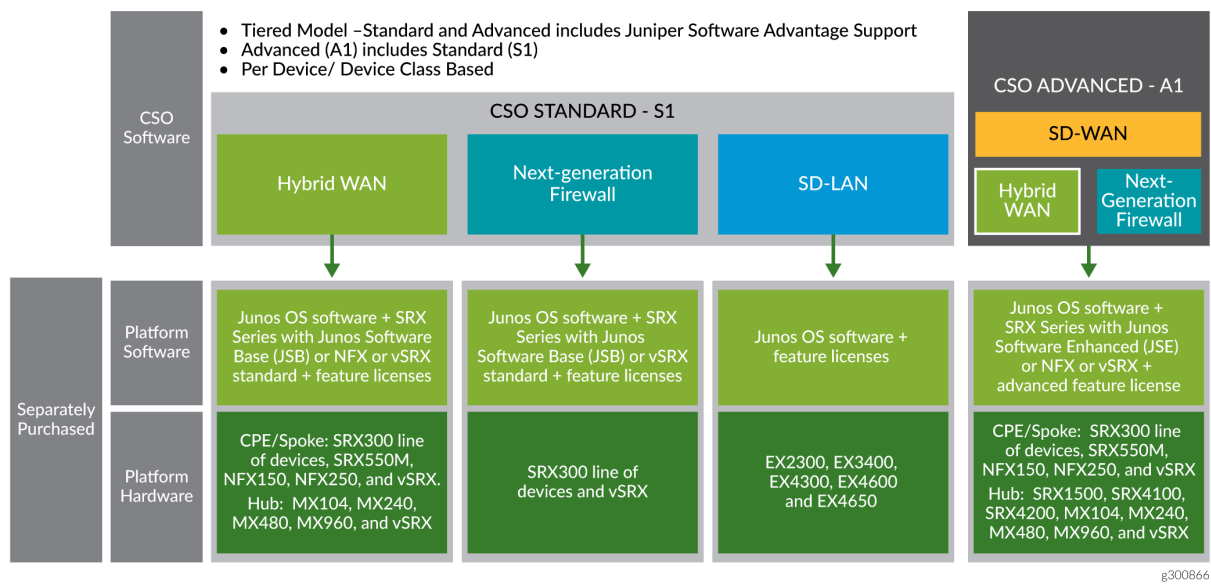


Table 37 on page 86 describes the Flex Software License Model support with use case examples for the Contrail Service Orchestration (CSO) software.

Table 37: CSO SKUs for Standard and Advanced License Model

License Model	Use Case Examples or Solutions	Features Supported
Standard	Hybrid WAN, next-generation firewall management, and SD-LAN	<p>A,B, and C class devices supports the following features:</p> <p>Authentication for VPNs, firewall, hybrid WAN-dual WAN links (active/backup), NAT, security event logs and reporting, single-WAN link-managed CPE, user firewall, UTM, and zero-touch provisioning (ZTP) for CPE devices.</p> <p>D and E class devices supports the following features:</p> <p>Automated switch deployment through ZTP, LAN configuration and monitoring, Mist Wi-Fi integration, switch management, and virtual chassis (VC).</p> <p>For more information on device categories, see Table 38 on page 87.</p>
Advanced	Hybrid WAN, next-generation firewall management, and SD-WAN	<p>A,B, and C class devices supports the following features:</p> <p>APBR, AppQoE, Authentication for VPNs, AWS cloud endpoint, bandwidth-optimized SLA (RPM), dual CPE, firewall, full mesh or dynamic VPN, hub multihoming, hybrid WAN-dual WAN links (active/backup), Internet Zscaler breakout, NAT, network segmentation, real-time-optimized SLA (AppQoE), SD-WAN up to four WAN links (active/active), security event logs and reporting, single-WAN link-managed CPE, SLA-based dynamic path selection, user firewall, UTM, and zero-touch provisioning (ZTP) for CPE devices</p> <p>For more information on device categories, see Table 38 on page 87.</p>

CSO supports various Juniper Networks devices. [Table 38 on page 87](#) lists the supported devices categorized into device classes.

Table 38: CSO supported Device Classification

Device Class	Supported Devices	
A	SD-WAN Supported Devices	Next-Generation Firewall
	<ul style="list-style-type: none"> • CPE/Spoke (<250) SRX300 line of devices with Junos Software Enhanced (JSE) NFX150 vSRX (2 vCPUs) 	Next-Generation Firewall Devices <ul style="list-style-type: none"> • Next-Generation Firewall services with Junos Software Enhanced (JSE) SRX300 line of devices vSRX (2 vCPUs)
B	<ul style="list-style-type: none"> • CPE/Spoke (<1Gbps) NFX250 SRX550 with Junos Software Enhanced (JSE) vSRX (5 vCPUs) • Enterprise Hub Devices (Gateway) (<1Gbps) SRX1500 (CSO release 5.0x onwards) Services gateways with Junos Software Enhanced (JSE) • Cloud Hub Devices (<1Gbps) SRX1500 Services gateways with Junos Software Enhanced (JSE) 	Next-Generation Firewall Devices <ul style="list-style-type: none"> • Next-Generation Firewall services with Junos Software Enhanced (JSE) vSRX (5 vCPUs)

Table 38: CSO supported Device Classification (*Continued*)

Device Class	Supported Devices	
C	<ul style="list-style-type: none"> • Enterprise Hub Devices (Gateway) (>1Gbps) SRX4100 and SRX4200 Services gateways with Junos Software Enhanced (JSE) • Cloud Hub Devices (>1Gbps) Services gateways with Junos Software Enhanced (JSE) SRX4100 and SRX4200 MX80, MX104, MX240, MX480, and MX960 vSRX (7 or 19 vCPUs) 	Next-Generation Firewall Devices <ul style="list-style-type: none"> • Next-Generation Firewall services with Junos Software Enhanced (JSE) vSRX (7 or 19 vCPUs)
D	Class D does not support any SD-WAN devices	SD-LAN Devices <ul style="list-style-type: none"> • EX2300, EX3400, and EX4300 switches
E	Class E does not support any SD-WAN devices	SD-LAN Devices <ul style="list-style-type: none"> • EX4600 and EX4650 switches

HealthBot Licensing

IN THIS SECTION

- [HealthBot Licensing Overview | 89](#)
- [Managing HealthBot Licenses | 91](#)

HealthBot Licensing Overview

Juniper Networks introduced the Juniper Flex Software Subscription Licensing model to provide an efficient way for customers and partners to manage licenses for hardware and software features. Contrail HealthBot uses this licensing model.

To use a licensed feature, you need to purchase and activate a license that corresponds to that feature and deploy that license so that it can be utilized by the software during normal operation. You can administer and manage the licenses through the [Juniper Agile Licensing Portal](#). The portal provides an intuitive, task-based user interface that provides full lifecycle management of licenses.

HealthBot supports the standalone mode for deploying licenses. Standalone mode allows you to activate a license on a software instance. Such a license can only be used by the instance on which it is activated. Sharing a license with multiple instances is not permissible.

HealthBot has three service levels:

HealthBot Standard (Free)	This is the free model solution and is available for customers that have a valid support contract. No license is required.
HealthBot Advanced	This is the first tier of the fee-based model solution and requires that you purchase a HealthBot Advanced feature license. You may purchase additional device-based feature licenses depending on your business needs.
HealthBot Premium	This is the second tier of the fee-based model solution and requires that you purchase a HealthBot Premium feature license. You may purchase additional device-based feature licenses depending on your business needs.

The following table shows a comparison between the HealthBot service models:

HealthBot Standard (Free)	HealthBot Advanced (Fee-based)	HealthBot Premium (Fee-based)
Free with a valid Juniper support contract.	Access to advanced features. You must purchase a HealthBot Advanced feature license. Additional device feature licenses available.	Access to premium features. You must purchase a HealthBot Premium feature license. Additional device feature licenses available. The premium feature set currently includes Time Series Database (TSDB) High Availability (HA).

(Continued)

HealthBot Standard (Free)	HealthBot Advanced (Fee-based)	HealthBot Premium (Fee-based)
No license required.	Subscription licenses.	Subscription licenses.
Limit of 5 custom playbooks and 10 custom rules.	Unlimited custom playbooks and custom rules.	Unlimited custom playbooks and custom rules.
Number of devices allowed is based on your contractual agreement.	Number of devices allowed is based on the number of device feature licenses purchased.	Number of devices allowed is based on device feature licenses purchased.
—	Full support for generating reports.	Full support for generating reports.
—	Full support for generating notifications.	Full support for generating notifications
—	Limited support for Time Series Database (TSDB) HA settings. You cannot configure TSDB HA settings.	Full support for changing TSDB HA and other TSDB settings.
—	Support for default and custom rules with machine learning features such as dynamic thresholds, outlier detection, median prediction, and microburst.	Support for default and custom rules with machine learning features such as dynamic thresholds, outlier detection, median prediction, and microburst.
—	Support for default and custom rules with user-defined functions.	Support for default and custom rules with user-defined functions.
—	Multivendor telemetry data collection.	Multivendor telemetry data collection.

*For information about HealthBot product options or to obtain a trial license, contact your local sales representative.

The following table lists the available HealthBot device feature licenses:

Device Feature Name	Description
HBOT-C1	Extra small devices such as small remote CPEs, small branch SRX, and small ACX.
HBOT-C2	Small switches such as fixed form factor EX, ACX, and QFX.
HBOT-C3	Small chassis-based switches, routers, and firewalls such as MX10003 and PTX10K3
HBOT-C4	Large chassis-based systems like the MX10K, PTX, and large SRX.

NOTE: In HealthBot releases prior to 3.1.0, the feature licenses were called HBOT-BASE, HBOT-G1, and HBOT-G2. License purchases made in previous versions will be honored in HealthBot 3.1.0. New license purchases as of 3.1.0 can not be applied to previous versions of HealthBot. See your local account manager for details.

For the HealthBot 3.1.0 release, enforcement of device license counts is based on the total number of all C1-C4 licenses installed minus the total number of licenses actually used. This enforcement model may change in future releases of HealthBot.

Managing HealthBot Licenses

IN THIS SECTION

- [Add a License to HealthBot | 92](#)
- [View Licensing Status in HealthBot | 92](#)

Once you have obtained a HealthBot license through the [Juniper Agile Licensing Portal](#), you can:

Add a License to HealthBot

To add a HealthBot license:

1. Click on the **Settings > License Management** option in the left-nav bar.
2. Click the **+ License** button.
3. Click the **Choose File** button in the pop-up window.
4. Navigate to the license file you want to add, and then click **Open**.
5. Click the **Add** button to add the license file.

The file should now appear in the **Licenses Added** table on the License Management page. For information about the **Licenses Added** table, see ["Licenses Added" on page 93](#).

View Licensing Status in HealthBot

The License Management page consists of two tables; the Features Summary table and the Licenses added table. Details of the table contents are shown below.

Features Summary

The following table describes the HealthBot feature license attributes in the Features Summary table:

Attribute	Description
Feature	HealthBot license name.
	HBOT-Premium Limit and usage count for premium feature licenses for this instance of HealthBot
	HBOT-Advanced Limit and usage count for advanced feature licenses for this instance of HealthBot
	HBOT-Devices Maximum number of devices that can be managed by this instance of HealthBot based on the device feature licenses added.
Description	Brief description of the HealthBot feature license.

(Continued)

Attribute	Description
License Limit	The number of valid HealthBot licenses successfully added and available for use.
Usage Count	The number of available licenses that are currently in use in this instance of HealthBot.
Valid Until	Date and time when the license expires.
Compliance	<p>Color definitions for dot indicator:</p> <p>Green Feature licenses are in compliance with Juniper's End User License Agreement.</p> <p>Yellow Device feature licenses are $\geq 90\%$ of the limit. You are getting close to running out of licenses. This status is only applicable to device feature licenses.</p> <p>Red Feature licenses are not in compliance with Juniper's End User License Agreement. Click on the red dot to view details about the compliance issue.</p>

Licenses Added

The following table describes the HealthBot license attributes in the **Licenses Added** table. Click the caret next to the **License ID** to view the features that are provided by the license ID.

Attribute	Description
License ID	Identification number for the HealthBot license generated through the Juniper Agile Licensing Portal.
SKU Name	Name of the HealthBot software licensing package.

(Continued)

Attribute	Description
Customer ID	Identification name for the customer.
Order Type	Types include: Commercial, demo, education, emergency, lab, and unknown.
Validity Type	Types include: Date-based or permanent.
Start Date	Start date of the HealthBot license.
End Date	End date of the HealthBot license.
Feature ID	Identification number for the feature license.
Feature Name	HealthBot feature license name. For more information, see "Features Summary" on page 92 .
Feature Description	Brief description of the HealthBot feature license.
License Count	<p>HBOT-Premium Allow premium capabilities in HealthBot</p> <p>HBOT-Advanced Allow advanced capabilities in HealthBot</p> <p>HBOT-C1 Number of C1 devices that can be managed by HealthBot..</p> <p>HBOT-C2 Number of C2 devices that can be managed by HealthBot.</p> <p>HBOT-C3 Number of C3 devices that can be managed by HealthBot.</p> <p>HBOT-C4 Number of C4 devices that can be managed by HealthBot .</p>

Release History Table

Release	Description
3.1.0	For the HealthBot 3.1.0 release, enforcement of device license counts is based on the total number of all C1-C4 licenses installed minus the total number of licenses actually used.

Flex Software License for NFX

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- NFX350 | 95

NFX350

Table 39 on page 96 shows NFX350 features for Flex Software License Model.

Figure 19 on page 96 shows NFX350 features for the Three-Tier (standard, advanced, and premium licenses).

Figure 19: NFX350

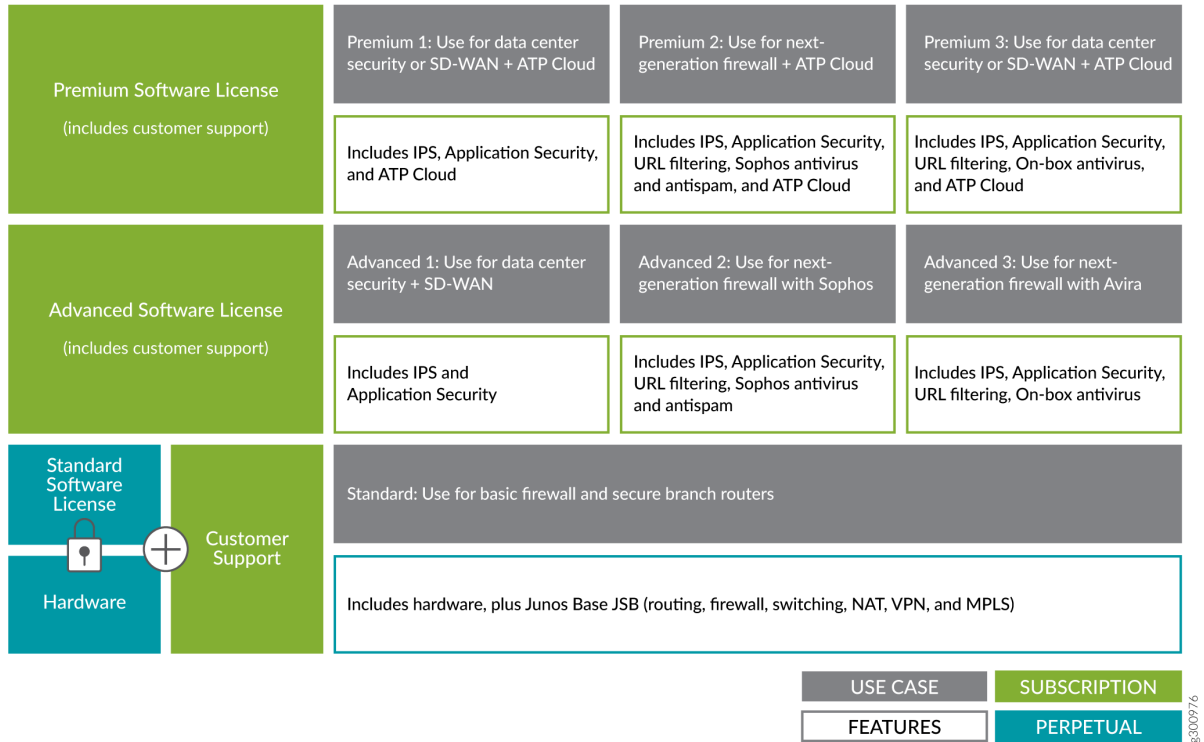


Table 39: NFX350 Flex Software License Model

NFX350 License Model	Use Case Examples or Solutions	Detailed Features
Standard	Use for basic firewall and secure branch routers	Includes hardware, plus Junos Base JSB (routing, firewall, switching, NAT, VPN, and MPLS)
Advanced	Advanced 1 Use for data center security + SD-WAN	Advanced 1 Includes IPS and Application Security

Table 39: NFX350 Flex Software License Model *(Continued)*

NFX350 License Model	Use Case Examples or Solutions	Detailed Features
	Advanced 2 Use for next-generation firewall with Sophos	Advanced 2 Includes IPS, Application Security, URL filtering, Sophos antivirus and antipsam
	Advanced 3 Use for next-generation firewall with Avira	Advanced 3 Includes IPS, Application Security, URL filtering, On-box antivirus
Premium	Premium 1 Use for data center security or SD-WAN + Cloud ATP	Premium 1 Includes IPS, Application Security, and ATP Cloud
	Premium 2 Use for next-generation firewall + Cloud ATP	Premium 2 Includes IPS, Application Security, URL filtering, Sophos antivirus and antispam, and ATP Cloud
	Premium 3 Use for data center security or SD-WAN + Cloud ATP	Premium 3 Includes IPS, Application Security, URL filtering, On-box antivirus, and ATP Cloud

Flex Software License for Northstar Controller

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NorthStar Controller

Table 40 on page 98 shows the definition of Juniper Networks NorthStar Controller license SKUs.

Table 40: NorthStar Controller SKU Definition

License SKU	SKU Character Description
S-NSC-1/10/100-S1/A1/P1-C1/C2/C3/C4-1/3/5	<p>S—Software</p> <p>NSC—Product name: NorthStar Controller</p> <p>1/10/100—License metrics for 1, 10, or 100 devices</p> <p>S1/A1/P1—Standard 1, Advanced 1, or Premium 1 software subscription</p> <p>C1/C2/C3/C4—Device class</p> <p>1/3/5—Subscription term: 1 year, 3 years, or 5 years</p>

Table 41 on page 100 describes the licensing support with use case examples for the NorthStar Controller.

Figure 20 on page 99 shows NorthStar Controller features for the standard, advanced, and premium licenses.

Figure 20: NorthStar Controller

Premium Software License (includes customer support)	Premium: Advanced Transport Engineering
	Includes advanced features, egress peering engineering and ingress peering engineering, multilayer packet-optical support, and network slicing management
Advanced Software License (includes customer support)	Advanced: LSP provisioning
	Includes standard features plus auto-bandwidth LSPs (NorthStar managed), diverse LSPs, high availability, LSP optimization (bandwidth, delay), LSP provisioning (RSVP and segment routing), LSP templates, maintenance events, P2MP LSP provisioning, standby and secondary LSPs, symmetric pair groups, enhanced traffic engineering (TE++) LSPs, and time-based LSP scheduling
Standard Software License (includes customer support)	Standard: Network visualization and monitoring
	Collection using HealthBot, cRPD support, delay visualization, dynamic topology acquisition, flow collection, interface statistics visualization, Juniper Telemetry Interface (JTI) telemetry collection, LDP Forwarding Equivalent Class (FEC), LSP reporting, point-to-multipoint (P2MP) LSP visualization, SNMP based collection, statistics visualization (RSVP and segment routing), and topology visualization
<div>USE CASE</div> <div>SUBSCRIPTION</div> <div>FEATURES</div>	

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Table 41: Supported Features on the NorthStar Controller

License Model	License SKUs	Use Case Example or Solution	Detailed Features
Standard	S-NSC-100-S1-C1-1/3/5 S-NSC-10-S1-C2-1/3/5 S-NSC-1-S1-C3-1/3/5 S-NSC-1-S1-C4-1/3/5	Network visualization and monitoring	Collection using HealthBot, cRPD support, delay visualization, dynamic topology acquisition, flow collection, interface statistics visualization, Juniper Telemetry Interface (JTI) telemetry collection, LDP Forwarding Equivalent Class (FEC), LSP reporting, point-to-multipoint (P2MP) LSP visualization, SNMP based collection, statistics visualization (RSVP and segment routing), and topology visualization
Advanced	S-NSC-100-A1-C1-1/3/5 S-NSC-10-A1-C2-1/3/5 S-NSC-1-A1-C3-1/3/5 S-NSC-1-A1-C4-1/3/5	LSP provisioning	Includes standard features plus auto-bandwidth LSPs (NorthStar managed), diverse LSPs, high availability, LSP optimization (bandwidth, delay), LSP provisioning (RSVP and segment routing), LSP templates, maintenance events, P2MP LSP provisioning, standby and secondary LSPs, symmetric pair groups, enhanced traffic engineering (TE++) LSPs, and time-based LSP scheduling

Table 41: Supported Features on the NorthStar Controller *(Continued)*

License Model	License SKUs	Use Case Example or Solution	Detailed Features
Premium	S-NSC-100-P1-C1-1/3/5 S-NSC-10-P1-C2-1/3/5 S-NSC-1-P1-C3-1/3/5 S-NSC-1-P1-C4-1/3/5	Advanced transport engineering	Includes advanced features, egress peering engineering and ingress peering engineering , multilayer packet-optical support, and network slicing management

Flex Software License for Northstar Planner

IN THIS SECTION

- [NorthStar Planner | 101](#)

NorthStar Planner

[Table 42 on page 102](#) shows the definition of Juniper Networks NorthStar Planner license SKUs.

Table 42: NorthStar Planner SKU Definition

License SKU	SKU Character Description
S-NSP-1/10/100-S1/A1-C1/C2/C3/C4-1/3/5	<p>S—Software</p> <p>NSP—Product name: NorthStar Planner</p> <p>1/10/100—License metrics for 1, 10, or 100 devices</p> <p>S1/A1—Standard 1, or Advanced 1 software subscription</p> <p>C1/C2/C3/C4—Device class</p> <p>1/3/5—Subscription term: 1 year, 3 years, or 5 years</p>

Table 43 on page 103 describes the licensing support with use case examples for the NorthStar Planner.

Figure 21 on page 102 shows NorthStar Planner features for the standard, and advanced licenses.

Figure 21: NorthStar Planner

Advanced Software License (includes customer support)	<p>Advanced : Advanced capacity planning</p> <p>Includes standard features plus compliancy assessment, cost-based design, fast reroute planning, GRE tunnels, hardware inventory and reports, integrity check and reports, multicast planning, network slicing planning, P2MP planning, traffic matrix solver, and VPN analysis and planning</p>
Standard Software License (includes customer support)	<p>Standard: Basic network planning</p> <p>BGP analysis, capacity planning, CoS analysis and planning, data collection from the NorthStar Controller, detailed reporting, ECMP analysis, failure simulation, file-based data insertion (configuration, operational, tunnels, delays, demands), path assignments, policy-based routes, routing protocols, and static routes</p>

USE CASE

SUBSCRIPTION

FEATURES

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Table 43: Supported Features on the NorthStar Planner

License Model	License SKUs	Use Case Example or Solution	Detailed Features
Standard	S-NSP-100-S1-C1-1/3/5 S-NSP-10-S1-C2-1/3/5 S-NSP-1-S1-C3-1/3/5 S-NSP-1-S1-C4-1/3/5	Basic network planning	BGP analysis, capacity planning, CoS analysis and planning, data collection from the NorthStar Controller, detailed reporting, ECMP analysis, failure simulation, file-based data insertion (configuration, operational, tunnels, delays, demands), path assignments, policy-based routes, routing protocols, and static routes
Advanced	S-NSP-100-A1-C1-1/3/5 S-NSP-10-A1-C2-1/3/5 S-NSP-1-A1-C3-1/3/5 S-NSP-1-A1-C4-1/3/5	Advanced capacity planning	Includes standard features plus compliancy assessment, cost-based design, fast reroute planning, GRE tunnels, hardware inventory and reports, integrity check and reports, multicast planning, network slicing planning, P2MP planning, traffic matrix solver, and VPN analysis and planning

The following [Table 44 on page 104](#) lists the available NorthStar Controller and NorthStar Planner device classification.

Table 44: Classification of Devices Supported by the NorthStar Controller and NorthStar Planner

Device Name	Description	Supported Devices
C1	Extra-small devices such as mobile backhaul access devices, and small or remote CPE devices	ACX500, ACX710, ACX1000, ACX1100, ACX2100, ACX2200, cSRX, EX2300, and SRX300
C2	Small devices such as compact, fixed-form-factor switches, metro access switches, and top-of-rack switches	ACX4000, ACX5048, ACX5096, ACX5448, ACX6160, ACX6360, EX4300, EX4600, EX4650, EX9250, MX5, MX10, MX40, MX80, MX104, MX150, MX204, vMX, PTX1000, PTX10001, QFX5110, QFX5120, QFX5200, QFX5210, QFX5220, QFX10002, SRX550, SRX1500, SRX4100, SRX4200, and vSRX
C3	Small chassis-based switches, routers, and firewalls (chassis with less than or equal to six slots)	EX9204, M Series, MX Series GNFs, MX240, MX480, MX10003, PTX10002, PTX10003, SRX3400, SRX3600, SRX4600, and SRX5400
C4	Large chassis-based systems (chassis with more than six slots)	EX9208, EX9214, MX960, MX2008, MX2010, MX2020, MX10008, MX10016, PTX3000, PTX5000, PTX10008, PTX10016, QFX10008, QFX10016, SRX5600, SRX5800, and T Series

2

PART

Non-Flex Software Licenses Model

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[Licenses for Routing Devices | 115](#)

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[Licenses for Network Management | 335](#)

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CHAPTER 6

Overview

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Software License Overview

IN THIS SECTION

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- [License Enforcement | 107](#)
- [Junos OS Feature License Keys | 108](#)

Junos OS Feature Licenses

Some Junos OS software features require a license to activate the feature. To enable a licensed feature, you need to purchase, install, manage, and verify a license key that corresponds to each licensed feature. To conform to Junos OS feature licensing requirements, you must purchase one license per feature per device. The presence of the appropriate software license key on your device determines whether you are eligible to configure and use the licensed feature.

To speed deployment of licensed features, Junos OS software implements an honor-based licensing structure and provides you with a 30-day grace period to use a licensed feature without a license key installed. The grace period begins when you configure the feature and your device uses the licensed feature for the first time, but not necessarily when you install the license. After the grace period expires, the system generates system log messages saying that the feature requires a license. To clear the error message and use the licensed feature properly, you must install and verify the required license.

Data center customers, for example those using the QFX platform, use universal licenses. Starting in Junos OS Release 15.1, to ensure that license keys are used properly, Juniper Networks license key

generation is enhanced to specify a customer ID in the license key. You can see the customer ID displayed in the output of the `show system license` command.

For information about how to purchase software licenses, contact your Juniper Networks sales representative.

SEE ALSO

Verifying Junos OS License Installation (CLI)

`show system license`

License Enforcement

For features or scaling levels that require a license, you must install and properly configure the license to meet the requirements for using the licensable feature or scale level. The device enables you to commit a configuration that specifies a licensable feature or scale without a license for a 30-day grace period. The grace period is a short-term grant that enables you to start using features in the pack or scale up to the system limits (regardless of the license key limit) without a license key installed. The grace period begins when the licensable feature or scaling level is actually used by the device (not when it is first committed). In other words, you can commit licensable features or scaling limits to the device configuration, but the grace period does not begin until the device uses the licensable feature or exceeds a licensable scaling level.

Configurations might include both licensed and nonlicensed features. For these situations, the license is enforced up to the point where the license can be clearly distinguished. For example, an authentication-order configuration is shared by both Authentication, Authorization, and Accounting (AAA), which is licensed, and by Layer 2 Tunneling Protocol (L2TP), which is not licensed. When the configuration is committed, the device does not issue any license warnings, because it is not yet known whether AAA or L2TP is using the configuration. However, at runtime, the device checks for a license when AAA authenticates clients, but does not check when L2TP authenticates clients.

The device reports any license breach as a warning log message whenever a configuration is committed that contains a feature or scale limit usage that requires a license. Following the 30-day grace period, the device periodically reports the breach to syslog messages until a license is installed and properly configured on the device to resolve the breach.

Successful commitment of a licensable feature or scaling configuration does not imply that the required licenses are installed or not required. If a required license is not present, the system issues a warning message after it commits the configuration.

SEE ALSO

<i>Adding New Licenses (CLI Procedure)</i>
<i>Deleting License Keys (CLI)</i>
<i>Saving License Keys (CLI)</i>
<i>Verifying Junos OS License Installation (CLI)</i>

Junos OS Feature License Keys

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- [License Key Components | 108](#)
- [License Management Fields Summary | 109](#)
- [Release-Tied License Keys and Upgrade Licenses on MX Series Routers | 110](#)
- [Licensable Ports on MX5, MX10, and MX40 Routers | 112](#)
- [Port Activation on MX104 Routers | 113](#)

This section contains the following topics:

License Key Components

A license key consists of two parts:

- License ID—Alphanumeric string that uniquely identifies the license key. When a license is generated, it is given a license ID.
- License data—Block of binary data that defines and stores all license key objects.

For example, in the following typical license key, the string XXXXXXXXXX is the license ID, and the trailing block of data is the license data:

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXX
```

The license data defines the device ID for which the license is valid and the version of the license.

License Management Fields Summary

The Licenses page displays a summary of licensed features that are configured on the device and a list of licenses that are installed on the device. The information on the license management page is summarized in [Table 45 on page 109](#).

Table 45: Summary of License Management Fields

Field Name	Definition
Feature Summary	
Feature	<p>Name of the licensed feature:</p> <ul style="list-style-type: none"> • Features—Software feature licenses. • All features—All-inclusive licenses
Licenses Used	Number of licenses currently being used on the device. Usage is determined by the configuration on the device. If a feature license exists and that feature is configured, the license is considered used.
Licenses Installed	Number of licenses installed on the device for the particular feature.
Licenses Needed	Number of licenses required for legal use of the feature. Usage is determined by the configuration on the device: If a feature is configured and the license for that feature is not installed, a single license is needed.
Installed Licenses	
ID	Unique alphanumeric ID of the license.
State	<p>Valid—The installed license key is valid.</p> <p>Invalid—The installed license key is not valid.</p>
Version	Numeric version number of the license key.

Table 45: Summary of License Management Fields (Continued)

Field Name	Definition
Group	<p>If the license defines a group license, this field displays the group definition.</p> <p>If the license requires a group license, this field displays the required group definition.</p> <p>Because group licenses are currently unsupported, this field is always blank.</p>
Enabled Features	Name of the feature that is enabled with the particular license.
Expiry	<p>Verify that the expiration information for the license is correct.</p> <p>For Junos OS, only permanent licenses are supported. If a license has expired, it is shown as invalid.</p>

To speed deployment of licensed features, Juniper Networks implements an honor-based licensing structure and provides you with a 30-day grace period to use a licensed feature without a license key installed. The grace period begins when you configure the feature and your device uses the licensed feature for the first time, but not necessarily when you install the license. After the grace period expires, the system generates system log messages saying that the feature requires a license. To clear the error message and use the licensed feature properly, you must install and verify the required license.

Data center customers, for example those using the QFX platform, use universal licenses. Starting in Junos OS Release 15.1, to ensure that license keys are used properly, Juniper Networks license key generation is enhanced to specify a customer ID in the license key. You can see the customer ID displayed in the output of the show system license command.

Release-Tied License Keys and Upgrade Licenses on MX Series Routers

The Junos OS licensing infrastructure currently associates a license feature with attributes such as date, platform, and validity. In addition to these attributes, for MX Series routers running Junos OS Release 12.2 and later, a licensed feature can be associated with a release number at the time of generating the license key. This type of release-tied license key is used to validate a particular licensed feature while attempting a software upgrade. The upgrade process terminates if the release number in the license key is earlier than the Junos OS release number to which the system is being upgraded.

Additionally, an upgrade license key can be generated for a release-tied licensed feature. An upgrade license key is used for carrying forward a capacity license to the upgrade release. Although an upgrade

license might be an acceptable license on the current release, it does not add to the existing capacity limit. The capacity added in the upgrade license key is valid for the upgrade software release only.

The release number embedded in the license key indicates the maximum release number up to which Junos OS can be upgraded.

As an example, assume that your system is running Junos OS Release 12.2 and is using the scale-subscriber licensed feature with a later release-tied upgrade license key installed. If you request a software upgrade to the later release of Junos OS, the software upgrade operation fails and the following error message is displayed:

```
mgd: error: No valid upgrade license found for feature 'scale-subscriber'.  
Aborting Software upgrade.  
Validation failed
```

In this example, to successfully upgrade to the later release of Junos OS, the release number included in the upgrade license key should be greater than or equal to the later release number. Also, you can perform software upgrades up to the previous release without any additional license keys to retain the existing scale limit.

When you install a release-tied license, the following apply:

- You can purchase an upgrade capacity license only if a base capacity license for the same scale-tier has already been generated or purchased.
- You cannot install an upgrade license if the capacity does not match any of the existing base capacity licenses on the system.
- The license installation fails when you install a lower release number license key on a higher software release number.
- A release-tied license can be installed on a Junos OS release number that is lower than or equal to the release number included in the license key. For example, a 12.2 license key is valid on Junos OS Release 12.1.
- An upgrade license is valid only on the target release number specified in the license key, but can be installed on an earlier Junos OS release. For example, a 4 K scale-tier upgrade license for Junos OS Release 12.2 can be installed on an earlier release, and the installed count of licenses remains unaltered.
- Release-tied licenses of the previous release are not deleted on upgrading Junos OS to a newer release version.

Licensable Ports on MX5, MX10, and MX40 Routers

Starting with Junos OS Release 12.2, license keys are available to enhance the port capacity on MX5, MX10, and MX40 routers up to the port capacity of an MX80 router. The MX5, MX10, and MX40 routers are derived from the modular MX80 chassis with similar slot and port assignments, and provide all functionality available on an MX80 router, but at a lower capacity. Restricting port capacity is achieved by making a set of MIC slots and ports licensable. MICs without a license are locked, and are unlocked or made usable by installing appropriate upgrade licenses.

The base capacity of a router is identified by the Ideeprom assembly ID (I2C ID), which defines the board type. However, the Junos OS licensing infrastructure allows the use of restricted ports without a license for a grace period of 30 days. After the grace period expires, the router reverts back to the base capacity if no upgrade license is purchased and installed for the locked ports. The I2C ID along with an upgrade license determine the final capacity of an MX5, MX10, or MX40 router.

The MX5, MX10, MX40, and MX80 routers support the following types of MICs:

- A built-in 10-Gigabit Ethernet MIC with four 10-Gigabit Ethernet ports
- Two front-pluggable MICs

A feature ID is assigned to every license upgrade for enhancing port capacity. [Table 46 on page 112](#) displays the chassis types and their associated port capacity, I2C ID, base capacity, feature ID, feature name, and the final capacity after a license upgrade.

Table 46: Upgrade Licenses for Enhancing Port Capacity

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
MX5	20G	0x556	Slot 1 <ul style="list-style-type: none"> • 1/MIC0 	f1—MX5 to MX10 upgrade	Slot 1 and 2 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1
MX10	40G	0x555	Slot 1 and 2 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1 	f2—MX10 to MX40 upgrade	Slot 2 and first 2 ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC1 • First 2 ports on 0/MIC0

Table 46: Upgrade Licenses for Enhancing Port Capacity (Continued)

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
MX40	60G	0x554	Slot 1, Slot 2 and first 2 ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1 • First 2 ports on 0/MIC0 	f3—MX40 to MX80 upgrade	Slot 2 and all ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC1 • All 4 ports on 0/MIC0

When installing an upgrade license for enhancing port capacity on MX5, MX10 and MX40 routers, consider the following:

- To upgrade an MX5 router to MX80 router capacity, licenses for all three features (f1, f2, f3) must be installed. All three features can be provided in a single license key.
- To upgrade an MX10 router to MX40 router capacity, installing a license key with f2 feature is sufficient.
- Non-applicable feature IDs in a license key reject the upgrade license. For example:
 - An f1 feature ID on an MX10 upgrade license key rejects the license.
 - Feature IDs f1 and f2 on an MX40 upgrade license key reject the entire license.

Port Activation on MX104 Routers

Starting with Junos OS Release 13.3, license keys are available to activate the ports on the MX104 router. MX104 routers have four built-in ports. By default, in the absence of valid licenses, all four built-in ports are deactivated. By installing licenses, you can activate any two of the four or all of the four built-in ports. For instance, you can install a license to activate the first two built-in ports (xe-2/0/0 and xe-2/0/1) or you can install a license to activate the next two built-in ports (xe-2/0/2 and xe-2/0/3). You can also install a license to activate all four built-in ports (xe-2/0/0, xe-2/0/1, xe-2/0/2, and xe-2/0/3). If you have already activated two of the built-in ports, you can install an additional license to activate the other two built-in ports on the MX104 router.

A feature ID is assigned to every license for activating the built-in ports on the MX104 router. The port license model with the feature ID is described in [Table 47 on page 114](#).

Table 47: Port Activation License Model for MX104 Routers

Feature ID	Feature Name	Functionality
F1	MX104 2X10G Port Activate (0 and 1)	Ability to activate first two built-in ports (xe-2/0/0 and xe-2/0/1)
F2	MX104 2X10G Port Activate (2 and 3)	Ability to activate next two built-in ports (xe-2/0/2 and xe-2/0/3)

Both the features are also provided in a single license key for ease of use. To activate all four ports, you must either install the licenses for both the features listed in [Table 47 on page 114](#) or the single license key for both features. If you install the single license key when feature IDs F1 and F2 are already installed, the license does not get rejected. Also, MX104 routers do not support the graceful license expiry policy. A graceful license expiry policy allows the use of a feature for a certain period of time (usually a grace period of 30 days), and reverts if the license for that feature is not installed after the grace period.

SEE ALSO

[Updating License Keys \(CLI\) | 283](#)

Release History Table

Release	Description
15.1	Starting in Junos OS Release 15.1, to ensure that license keys are used properly, Juniper Networks license key generation is enhanced to specify a customer ID in the license key.

RELATED DOCUMENTATION

[Managing Licenses | 384](#)

Licenses for Routing Devices

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- Licenses for PTX, MX, M and T Series | 116
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Licenses for ACX Series

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- Software Features Requiring Licenses on ACX5448-D and ACX5448-M Routers | 115

Software Features Requiring Licenses on ACX5448-D and ACX5448-M Routers

Each feature license is tied to one software feature, and that license is valid for one device. Each license allows you to run the specified software features on a single device.

[Table 48 on page 116](#) lists the licensed features that you can purchase for ACX5448-D and ACX5448-M Series Universal Metro Routers.

Table 48: Junos OS Feature License Model Number for ACX5448-D and ACX5448-M Series Universal Metro Routers

Supported Device	Licenses Software Feature	License Model	Scale	Model Number
ACX5448-D and ACX5448-M	IP, MPLS, timing, CoS, E-OAM, telemetry, RFC2544	Advanced	32 L3VPN and 8 NG-MVPN	S-ACX-400G-A-1 S-ACX-400G-A-3 S-ACX-400G-A-5
ACX5448-D and ACX5448-M	All advanced software subscription license features with full-scale.	Premium	Full-scale	S-ACX-400G-P-1 S-ACX-400G-P-3 S-ACX-400G-P-5

Licenses for PTX, MX, M and T Series

IN THIS SECTION

- [Software Features That Require Licenses on M Series, MX Series, and T Series Routers | 117](#)
- [Software Features That Require Licenses on MX Series Routers Only | 122](#)
- [Software Features That Require Licenses on M Series Routers Only | 136](#)
- [License Modes for PTX Series Routers | 137](#)
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- [Junos OS Feature License Keys | 149](#)
- [Subscriber Access Licensing Overview | 153](#)
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Software Features That Require Licenses on M Series, MX Series, and T Series Routers

Table 49 on page 117 lists the licenses you can purchase for each M Series, MX Series, and T Series software feature. Each license allows you to run the specified software feature on a single device.

The DHCP server functionality for Junos OS is part of the subscriber management feature. You must have the S-SA-FP, S-MX80-SA-FP or S-MX104-SA-FP license in order to enable the DHCP server. For service accounting, you must also have S-SSM-FP.

For information about how to purchase a software license, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers

Licensed Software Feature	Supported Devices	Model Number
Generalized Multiprotocol Label Switching (GMPLS) Support on Junos OS	M10i, M7i, M120, M160, M20, M320, M40e, T320, T640, and MX Series Routers	JS-GMPLS
IPv6 Support on Junos OS	M120, M160, M20, M320, M40e, T320, T640, and MX Series Routers	JS-IPv6
Logical Router Support for Junos OS	M10i, M120, M160, M20, M320, M40e, M7i, T320, T640, and MX Series Routers	JS-LR
J-Flow accounting license for Adaptive Services (AS) PIC and Multiservices PIC	M10i, M120, M160, M20, M320, M40e, M7i, T320, M10, M5, T640, and T1600	S-ACCT
Chassis license for Application Traffic Optimization service, policy enforcement and application statistics. This license includes S-AI and S-LDPF functionality and 1-year Signature Subscription License	MX104, MX240, MX480, MX960, M Series, and T Series Routers	S-ATO

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers
(Continued)

Licensed Software Feature	Supported Devices	Model Number
Software License for Passive Monitoring Flow Collector Application, supporting 100 Kpps throughput; Chassis based license for Multiservices PIC	M320, T640, T320, T1600	S-COLLECTOR-100K
License to use Compressed Real-Time Transport Protocol (CRTP) feature in AS PIC and Multiservices PIC	M10i, M120, M160, M20, M320, M40e, M7i, T320, M10, M5, T640, and T1600	S-CRTP
Software License for Passive Monitoring DFC Application, supporting 100Kpps throughput; Chassis based license for Multiservices PIC	M320, T640, T320, and T1600	S-DFC-100K
Security Services license for AS PIC and Multiservices PIC	M10i, M7i, M5, M120, M160, M20, M320, M40e, T320, T640, M10, and T1600	S-ES
Chassis license for IDP service, policy enforcement. This license includes S-AI and S-LDPF functionality and 1-year Signature Subscription License	MX104, MX240, MX480, MX960, M Series, and T Series Routers	S-IDP
Junos-FIPS Software License	M10i, M7i, M320, M40e, T320, and T640	S-JUNOS-FIPS

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers
(Continued)

Licensed Software Feature	Supported Devices	Model Number
Link Services Software License—up to 1023 ML bundles per Chassis for Multiservices PIC and Multiservices Dense Port Concentrator (DPC)	M5, M7i, M10, M10i, M20, M40e, M120, M320, T320, T640, T1600, MX240, MX480, and MX960	S-LSSL-1023
Link Services Software Upgrade License—from 255 to 1023 ML bundles per Chassis for Multiservices PIC and Multiservices DPC	M5, M7i, M10, M10i, M20, M40e, M120, M320, T320, T640, T1600, MX240, MX480, and MX960	S-LSSL-1023-UPG
Link Services Software Upgrade License—from 64 to 255 ML bundles per Chassis for AS PIC, Multiservices PIC, and Multiservices DPC	M5, M7i, M10, M10i, M20, M40e, M120, M320, T320, T640, T1600, MX240, MX480, and MX960	S-LSSL-255-UPG
Link Services Software License—up to 255 ML bundles per Chassis for AS PIC, Multiservices PIC, and Multiservices DPC	M10, M7i, M5, M120, M20, M320, M40e, T320, T640, M10i, T1600, MX240, MX480, and MX960	S-LSSL-256
Link Services Software License—up to 4 ML bundles per Chassis for AS PIC, Multiservices PIC, and Multiservices DPC	M10i, M120, M20, M320, M40e, M7i, T320, M10, M5, T640, T1600, MX240, MX480, and MX960	S-LSSL-4
Link Services Software License—up to 64 ML bundles per Chassis for AS PIC, MS PIC and MS DPC	M10, M7i, M5, M120, M20, M320, M40e, T320, T640, M10i, T1600, MX240, MX480, and MX960	S-LSSL-64

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers
(Continued)

Licensed Software Feature	Supported Devices	Model Number
Link Services Software Upgrade License—from 4 to 64 ML bundles per Chassis for AS PIC, Multiservices PIC, and Multiservices DPC	M5, M7i, M10, M10i, M20, M40e, M120, M320, T320, T640, T1600, MX240, MX480, and MX960	S-LSSL-64-UPG
Software License for Passive Monitoring Flow Monitor Application, supporting 1M flows. Chassis based license for Multiservices PIC	M320, T640, T320, and T1600	S-MONITOR-1M
Network Address Translation (NAT), FW license on AS PIC and Multiservices PIC: Multi-instance	M10, M7i, M5, M120, M160, M20, M320, M40e, T320, T640, M10i, and T1600	S-NAT-FW-MULTI
NAT, FW license on AS PIC and Multiservices PIC: Single-instance	M10, M7i, M5, M120, M160, M20, M320, M40e, T320, T640, M10i, and T1600	S-NAT-FW-SINGLE
Software license for Packet trigger subscriber policy	MX240, MX480, MX960, M120, and M320	S-PTSP
Subscriber Access Feature Pack License Scaling (128000)	MX104, MX240, MX480, MX960, M120, and M320	S-SA-128K
Subscriber Access Feature Pack License Scaling (32000)	MX104, MX240, MX480, MX960, M120, and M320	S-SA-32K
Subscriber Access Feature Pack License Scaling (4000)	MX104, MX240, MX480, MX960, M120, M320, and MX80	S-SA-4K

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers
(Continued)

Licensed Software Feature	Supported Devices	Model Number
Subscriber Access Feature Pack License Scaling (64000)	MX104, MX240, MX480, MX960, M120, and M320	S-SA-64K
Subscriber Access Feature Pack License Scaling (8000)	MX104, MX240, MX480, MX960, M120, M320, and MX80	S-SA-8K
Subscriber Access Feature Pack License Scaling (96000)	MX104, MX240, MX480, MX960, M120, and M320	S-SA-96K
Subscriber Access Feature Pack license	MX104, MX240, MX480, MX960, M120, and M320	S-SA-FP
Stateful Failover for Services on AS PIC and Multiservices PIC: Multilink PPP (MLPPP) only	M10, M7i, M5, M120, M160, M20, M320, M40e, T320, T640, M10i, and T1600	S-SERVICES-SFO
Subscriber Service Management Feature Packet License (RADIUS/SRC based Service Activation and Deactivation) Per-Service Accounting Features for Subscribers	MX104, MX240, MX480, MX960, M120, and M320	S-SSM-FP
Subscriber Traffic Lawful Intercept Feature Pack License	MX240, MX480, MX960, M120, M320, and MX80	S-SSP-FP
Software license for application aware traffic direct feature	MX240, MX480, MX960, M120, and M320	S-TFDIRECT-APP
Software license for subscriber aware traffic direct feature	MX240, MX480, MX960, M120, and M320	S-TFDIRECT-SUB

Table 49: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers
(Continued)

Licensed Software Feature	Supported Devices	Model Number
Video Services Feature Pack license	M120, M320, MX80, MX104, MX240, MX480, and MX960	S-VIDEO-FP
Port capacity enhancement Feature Pack License for MX5 routers	MX5	mx5-to-mx10-upgrade
Port capacity enhancement Feature Pack License for MX10 routers	MX10	mx10-to-mx40-upgrade
Port capacity enhancement Feature Pack License for MX40 routers	MX40	mx40-to-mx80-upgrade

Software Features That Require Licenses on MX Series Routers Only

Table 50 on page 124 lists the licenses you can purchase for each MX Series software feature. Each license allows you to run the specified software feature on a single device.

- This is not a complete list of licenses. Contact your Juniper Networks representative for license information.
- License is not required to use NAT feature on MX150, MX204, and MX10003 routers.

For information about how to purchase a software license, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

MX Series Routers and MPC Service Cards support Flex Licensing. For more information on supported platforms and features, see [Flex Software License for MX Series Routers and MPC Service Cards](#).

The DHCP server functionality for Junos OS is part of the subscriber management feature. You must have the S-SA-FP, S-MX80-SA-FP or S-MX104-SA-FP license in order to enable the DHCP server. For service accounting, you must also have S-SSM-FP.

Starting in Junos OS Release 16.1R1, after the completion of the 30 day grace period, DHCP bindings on MX series devices are limited to 10. This counts against broadband scale licenses S-MX104-SA-FP and S-SA-4K.

Licensing details for DHCP Relay Configurations—If processing `dhcp-relay relay-option-82` is not required, then configure the `forward-only` statement under the `[edit forwarding-options dhcp-relay relay-option (default-action | equals | starts-with)]` hierarchy-level instead of configuring `dhcp-relay` directly. The forward-only DHCP Relay configurations do not require the S-SA-FP / S-MX80-SA-FP / S-MX104-SA-FP license to be installed. Also, configuring forward-only DHCP Relay assumes that the peer DHCP server is capable of returning `relay-option-82` attributes originally sent via the DHCP Relay.

Subscriber Access Feature Pack (SKUs - S-SA-FP, S-MX80-SA-FP, and S-MX104-SA)

- Per subscriber RADIUS accounting (time and volume based) – require SSM for per service accounting
- RADIUS-based authentication and authorization
- Subscriber configuration through client profiles at subscriber login
- You require the S-SSM-FP SKU to change variable values within client profiles through radius grant or access accept, COA or RID, and SRC
- RADIUS and SDX based address pool management
- Static and dynamic IP management
- Dynamic auto-sensed VLANs
- Video edge services (S-SA-FP SKU is the superset and the S-VIDEO-FP SKU is not required)

Subscriber Services Management Feature Pack (SKUs - S-SSM-FP, S-MX80-SSM-FP, and S-MX104-SSM-FP)

- Per service RADIUS accounting (time and volume based)
- Activate or deactivate service profiles at subscriber login through the RADIUS grants or access accepts (services activation and deactivation VSAs) or changes to existing sessions through the RADIUS COA or RID, or SRC
- Parameterization of service profiles
- ANCP QoS adjustment based on synchronization rate through ANCP

Table 50: Junos OS Feature License Model Number for MX Series Routers

Licensed Software Feature	Supported Devices	Model Number
<p>License to use IDS for DDoS mitigation on services card NPU.</p> <p>The license is per NPU for MS-MIC and MS-MPC service cards.</p>	<p>MS-MPC service card is supported on MX240, MX480, MX960, MX2008, MX2010, and MX2020</p> <p>MS-MIC service card is supported on MX5 through MX104, MX240, MX480, MX960, MX2008, MX2010, and MX2020</p>	S-IDS-NPU
Upgrade license—from MX80-10G-ADV to MX80-40G-ADV	MX80	MX80-10G40G-UPG-ADV-B
Upgrade license—from MX80-10G to MX80-40G	MX80	MX80-10G40G-UPG-B
Upgrade license—from MX80-40G-ADV to full MX80	MX80	MX80-40G-UPG-ADV-B
Upgrade license—from MX80-40G to full MX80	MX80	MX80-40G-UPG-B
Upgrade license—from MX80-5G-ADV to MX80-10G-ADV	MX80	MX80-5G10G-UPG-ADV-B
Upgrade license—from MX80-5G to MX80-10G	MX80	MX80-5G10G-UPG-B
Upgrade license to activate 2x10GE P2&3	MX104	S-MX104-ADD-2X10GE

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Upgrade license to activate 2X10GE P0&1	MX104	S-MX104-UPG-2X10GE
Upgrade license to activate 4X10GE fixed ports on MX104	MX104	S-MX104-UPG-4X10GE
License to support per VLAN queuing on MX80	MX5, MX10, MX40, and MX80	S-MX80-Q
License to support per VLAN queuing on MX104	MX104	S-MX104-Q
Chassis-based software license for inline J-Flow monitoring on MX5, MX10, M40, MX80, and MX104 Series routers	MX5, MX10, MX40, MX80, and MX104	S-JFLOW-CH-MX5-104
Chassis-based software license for inline J-Flow monitoring on MX240 routers	MX240	S-JFLOW-CH-MX240
Chassis-based software license for inline J-Flow monitoring on MX480 routers	MX480	S-JFLOW-CH-MX480
Chassis-based software license for inline J-Flow monitoring on MX960 routers	MX960	S-JFLOW-CH-MX960
Chassis-based software license for inline J-Flow monitoring on MX2008 routers	MX2008	S-JFLOW-CH-MX2008

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Chassis-based software license for inline J-Flow monitoring on MX2010 routers	MX2010	S-JFLOW-CH-MX2010
Chassis-based software license for inline J-Flow monitoring on MX2020 routers	MX2020	S-JFLOW-CH-MX2020
Flow monitoring and accounting features using J-Flow service on any Modular Port Concentrator (MPC) or MS-DPC	MX240, MX480, and MX960	S-ACCT-JFLOW-CHASSIS
Software License for in-line J-Flow service on Trio MPCs	MX240, MX480, MX960, MX2008, MX2010, and MX2020	S-ACCT-JFLOW-IN
Flow monitoring and accounting features using J-Flow service on any MPC limited to 10G of total JFLOW traffic	MX80	S-ACCT-JFLOW-IN-10G
Flow monitoring and accounting features using J-Flow service on any MPC limited to 10G of total JFLOW traffic	MX80	S-ACCT-JFLOW-IN-10G-UPG

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Flow monitoring and accounting features using J-Flow service on any MPC limited to 5G of total JFLOW traffic	MX80	S-ACCT-JFLOW-IN-5G
Security services (IPsec, VPN and group VPN) license based on a single NPU for MS-MIC, MS-DPC or MS-MPC	MX Series Routers	S-ES-NPU
2000 IKE sessions on MS-DPC; Chassis based, limited to 6000 per Chassis	MX240, MX480, and MX960	S-ES-2K
4000 IKE sessions on MS-DPC; Chassis based, limited to 6000 per Chassis	MX240, MX480, and MX960	S-ES-4K
Upgrade from 2000 IKE sessions to 4000 IKE sessions on MS-DPC; Chassis based, limited to 6000 per Chassis	MX240, MX480, and MX960	S-ES-4K-UPG
6000 IKE sessions on MS-DPC; Chassis based, limited to 6000 per Chassis	MX240, MX480, and MX960	S-ES-6K
Upgrade from 4000 IKE sessions to 6000 IKE Sessions on MS-DPC; Chassis based, limited to 6000 per Chassis	MX240, MX480, and MX960	S-ES-6K-UPG

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
License to run stateful firewall on one NPU per MS-MIC, MS-DPC or MS-MPC	MX Series Routers	S-FW-NPU
License to support DS3 Channelization (down to DS0) on each Modular Interface Card (MIC) for MIC-3D-8DS3-E3; also requires license S-MX80-Q when used on the MX80 platform	MX5, MX10, MX40, MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020	S-MIC-3D-8CHDS3
License to support full-scale Layer 3 routes and Layer 3 VPN	MX5, MX10, MX40, and MX80	S-MX80-ADV-R
License to support 256K routes	MX104	S-MX104-ADV-R1
License to support scaling Layer 3 and VPN routes to 1 million or more entries on MX104 platforms	MX104	S-MX104-ADV-R2
License to support full-scale Layer 3 routes and Layer 3 VPN on each slot for MPC-3D-16XGE-SFPP	MX240, MX480, MX960, MX2010, and MX2020	S-MPC-3D-16XGE-ADV-R
License to support full-scale Layer 3 routes and Layer 3 VPN on each slot for port queuing MPCs	MX240, MX480, MX960, MX2010, and MX2020	S-MPC-3D-PQ-ADV-R

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
License to support Precision Timing Protocol (PTP)	MX204, MX240, MX480, MX960, MX10003, MX10008, and MX10016	S-MPC-3D-PTP
License to support full-scale Layer 3 routes and Layer 3 VPN on each slot for hierarchical quality of service (HQoS) MPCs	MX240, MX480, MX960, MX2010, and MX2020	S-MPC-3D-VQ-ADV-R
Subscriber Management Feature Pack License	MX5, MX10, MX40, and MX80	S-MX80-SA-FP (Includes S-LNS-IN)
	MX104	S-MX104-SA-FP (Includes S-LNS-IN)
Subscriber Access Feature Pack License	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-FP
Subscriber Service Management Feature Packet License—RADIUS and SRC-based service activation and deactivation per-service accounting features	MX5, MX10, MX40, and MX80	S-MX80-SSM-FP
	MX104	S-MX104-SSM-FP
	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SSM-FP
Upgrade to Traffic Direct Advanced (per MS-DPC)	MX960	S-MX-TD-UPG

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
License to run one instance of the NAT software on one NPU per MS-DPC	MX240, MX480, and MX960	S-NAT
License to support inline NAT software on MX5, MX10, MX40, MX80, MX104	MX5, MX10, MX40, MX80, and MX104	S-NAT-IN-MX5-104 (Replaces S-NAT-IN-MX40-MX80 and S-NAT-IN-MX5-MX10)
License to run one instance of the NAT software on one NPU per MS-MIC, MS-DPC, or MS-MPC	MX Series Routers	S-NAT-NPU (Replaces S-NAT-IN-MX40-MX80-UPG)
License to run NAT using any MPC in an MX Chassis	MX240, MX480, and MX960	S-NAT-IN-MX-CHASSIS
Subscriber Access Feature Pack License Scaling (4000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-4K
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 4000 through 8000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-8K
Subscriber Access Feature Pack License Scaling (8000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-8K

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 8000 through 16,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-16K
Subscriber Access Feature Pack License Scaling (16,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-16K
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 16,000 through 32,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-32K
Subscriber Access Feature Pack License Scaling (32,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-32K
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 32,000 through 64,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-64K

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Subscriber Access Feature Pack License Scaling (64,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-64K
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 64,000 through 96,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-96K
Subscriber Access Feature Pack License Scaling (96,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-96K
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 96,000 through 128,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-128K
Subscriber Access Feature Pack License Scaling (128,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-128K

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Upgrade license—Subscriber Access Feature Pack scaling license upgrade from 128,000 through 256,000 subscribers	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-UP-256K
Subscriber Access Feature Pack License Scaling (256,000)	MX5, MX10, MX40, MX80, MX104, MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SA-256K
Software License for Secure Flow Mirroring Service (FlowTap) (does not require MS-DPC)	MX80, MX104, MX240, MX480, and MX960	S-SFM-FLOWTAP-IN
License to run one instance of the SFW and software on a MS-DPC	MX960, MX480, and MX240	S-SFW
Software license for one member of an MX Virtual Chassis	MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-VCR
Upgrade license—from MX10 to equivalent of MX40; allows additional 2x10G fixed ports to be used on the MX10 router	MX10-T	MX10-40-UPG
Upgrade license—from MX10 to equivalent of MX80; allows additional 4x10G fixed ports to be used on the MX10 router	MX10-T	MX10-80-UPG

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
Upgrade license—from MX40 to equivalent of MX80; allows additional 2x10G fixed ports to be used on the MX40 router	MX40-T	MX40-80-UPG
Upgrade license—from MX5 to equivalent of MX10; allows second MIC slot to be used on the MX5 router	MX5-T	MX5-10-UPG
Upgrade license—from MX5 to equivalent of MX40; allows second MIC slot and 2x10G fixed ports to be used on the MX5 router	MX5-T	MX5-40-UPG
Upgrade license—from MX5 to equivalent of MX80. Allows second MIC slot and 4x10G fixed ports to be used on the MX5 router	MX5-T	MX5-80-UPG
License to use MX as Controller or Aggregation device for Junos Fusion. One license per MX is needed.	MX5, MX10, MX40, MX80, MX104, MX240, MX480, MX960, MX2010, and MX2020	S-MX-AD-FUSION-LIC
License to run any supported EX4300 model as a satellite device in Junos Fusion mode. One license per EX4300 is needed	MX204, MX240, MX480, MX960, MX2010, MX2020, and MX10003	S-MX-SAT-EX4300

Table 50: Junos OS Feature License Model Number for MX Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
License to run any supported QFX5100 model as a satellite device in Junos Fusion mode. One license per QFX5100 is needed	MX204, MX240, MX480, MX960, MX2010, MX2020, and MX10003	S-MX-SAT-QFX5100
Subscriber Traffic Lawful Intercept Feature Pack License Software License for FlowTapLite	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-SSP-FP
Junos BB Policy Enforcement Feature License for dynamic subscriber authentication and authorization using NASREQ (1 per chassis)	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-BB-NASREQ
Junos BB Policy Enforcement feature license for PCRF communications using 3GPP Gx and Gx+ (1 per chassis)	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-BB-GX
Junos BB Policy Enforcement feature license for online charging using 3GPP Gy interface (1 per chassis)	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-BB-GY
Software License for Inline L2TP LNS (MX204, MX240/480/960, MX2008, MX2010/2020) (1 per chassis)	MX204, MX240, MX480, MX960, MX2008, MX2010, MX2020, and MX10003	S-LNS-IN

Software Features That Require Licenses on M Series Routers Only

Table 51 on page 136 lists the licenses you can purchase for each M Series software feature. Each license allows you to run the specified software feature on a single device.

For information about how to purchase a software license, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

Table 51: Junos OS Feature License Model Number for M Series Routers

Licensed Software Feature	Supported Devices	Model Number
J-Flow accounting license on Integrated Adaptive Services Module (ASM) and Integrated Multiservices Module	M7i	S-ACCT-BB
Security Services license on ASM and Integrated Multiservices Module	M7i	S-ES-BB
Layer 2 Tunneling Protocol (L2TP) L2TP Network Server (LNS) license for 16000 sessions on Multiservices PIC	M120	S-LNS-16K
L2TP LNS license Upgrade—from 8000 to 16000 sessions on Multiservices PIC	M120	S-LNS-16K-UPG
L2TP LNS license for 2000 sessions on AS PIC or Integrated Adaptive Services Module and Multiservices PIC	M7i, M10i, and M120	S-LNS-2K
L2TP LNS license for 4000 sessions on AS PIC or Integrated Adaptive Services Module and Multiservices PIC	M7i, M10i, and M120	S-LNS-4K
L2TP LNS license Upgrade—from 2000 to 4000 sessions on AS PIC or Integrated Adaptive Services Module and Multiservices PIC	M7i, M10i, and M120	S-LNS-4K-UPG

Table 51: Junos OS Feature License Model Number for M Series Routers (Continued)

Licensed Software Feature	Supported Devices	Model Number
L2TP LNS license for 8000 sessions on Multiservices PIC	M7i, M10i, and M120	S-LNS-8K
L2TP LNS license Upgrade—from 4000 to 8000 sessions on AS PIC and Multiservices PIC	M7i, M10i, and M120	S-LNS-8K-UPG
Link services software license on integrated ASM and Integrated Multi Services Module—up to 4 ML bundles	M7i	S-LSSL-BB
NAT, FW license on Integrated ASM and Integrated Multi Services Module: Multi instance	M7i	S-NAT-FW-MULTI-BB
NAT, FW license on Integrated ASM and Integrated Multi Services Module: Single instance	M7i	S-NAT-FW-SINGLE-BB
Tunnel services software license for AS PIC and Multiservices PIC (chassis license)	M7i and M10i	S-TUNNEL

License Modes for PTX Series Routers

PTX Series routers are available in two license variants: IR and R. Depending on the license purchased, the router offers full IP or LSR.

[Table 52 on page 138](#) describes the two license variants for the PTX1000.

Table 52: License Variants for the PTX1000

License	Description	Scale Restrictions
IR	Scaled up LSR and peering	<ul style="list-style-type: none"> • Up to 1 million routes in the forwarding information base (FIB) • Up to 6 million routes in the routing information base (RIB) • Up to 256 routing instances of the virtual routing and forwarding (VRF) instance type • Up to 128 thousand LSPs
R	Full IP core	None

The PTX1000 licenses are non-transferable.

You can upgrade the IR license scale to R license scale through an upgrade license. For example, the PTX1K-72Q-AC-IR can be upgraded to PTX1K-72Q-AC-R using the S-PTX1K-72Q-SCA-UP upgrade license.

The `license-mode` statement is only supported on the PTX3000 and PTX5000 Series routers with third-generation FPCs.

[Table 53 on page 139](#) describes the two license variants for the PTX3000 and PTX5000.

Table 53: License Variants for the PTX3000 and PTX5000 FPCs

License	Description	Scale Restrictions
IR	Scaled up LSR and peering	<ul style="list-style-type: none"> • Up to 2 million routes in the forwarding information base (FIB) • Up to 6 million routes in the routing information base (RIB) • Up to 256 routing instances of the virtual routing and forwarding (VRF) instance type • Up to 128 thousand LSPs
R	Full IP core	None

For the PTX3000 and PTX5000, If you purchase two FPCs: one with an IR license and one with an R license. After the FPCs are installed on a router, both FPCs appear identical. To distinguish between an FPC with an IR license and an FPC with an R license after the FPC is installed on the router, you must configure the license mode based on the license purchased. For instance, if you purchased an FPC with the IR license, you must configure the license mode for that FPC as IR. The license mode settings are set specific to each FPC slot. If the FPC is installed in a different slot, or moved to another device, the license mode settings must be reconfigured on the new slot or device. Also, the license mode settings previously configured must be deleted.

The license mode settings are used only to provide information. You cannot set or alter the license of the FPC by configuring the license mode.

To view the current license mode settings, from the configuration mode, use the `show chassis fpc` command. To view the current license mode settings, from the operational mode, use the `show chassis hardware extensive` command. To delete the existing license mode settings, use the `delete chassis fpc` command.

License Modes for Enhanced MPCs Overview

Enhanced MPCs are available in three license variants. Before Junos OS Release 16.1, there were two variants: infrastructure routing (IR) and routing (R). Starting in Junos OS Release 16.1, there is also a base variant, making a total of three licence variants. All variants support an identical feature set, but with a few scale differences. [Table 54 on page 140](#) describes the three license variants.

Table 54: License Variants for MPCs

License	How to Identify	Description
base	No special suffix in the license name.	<ul style="list-style-type: none"> • All Layer 2, Layer 2.5, and Layer 3 features. • Up to 32 Layer 3 routing instances of the virtual routing and forwarding (VRF) instance. The VRF support includes Layer 3 VPN (L3VPN). • Up to 2 million routes in the forwarding information base (FIB), provided there is hardware support. (FIB is also known as forwarding table.) • Up to 6 million routes in the routing information base (RIB), also known as routing table.
IR	-IR suffix in the license name.	<ul style="list-style-type: none"> • All Layer 2, Layer 2.5, and Layer 3 features. • Up to 32 Layer 3 routing instances of the virtual routing and forwarding (VRF) instance. The VRF support includes Layer 3 VPN (L3VPN).
R	-R suffix in the license name.	Full-scale Layer 2, Layer 2.5, and Layer 3 features. Scale is determined by the hardware capabilities.

Suppose you have purchased two MPC4Es: one with IR license and one with R license. After the MPCs are installed on a router, both MPCs appear identical. To distinguish between an MPC with an IR license and an MPC with an R license after the MPC is installed on the router, you must configure the license mode based on the license purchased. For instance, if you have purchased an MPC with the IR license, you must configure the license mode for that MPC as IR. The license mode settings are set specific to each MPC slot. If the MPC is installed in a different slot, or moved to another device, the license mode settings must be reconfigured on the new slot or device. Also, the license mode settings previously configured must be deleted.

The license mode settings are used only to provide information. You cannot set or alter the license of the MPC by configuring the license mode.

To view the current license mode settings on an MPC, from the configuration mode, use the `show chassis fpc` command. To view the current license mode settings on an MPC, from the operational mode, use the `show chassis hardware extensive` command. To delete the existing license mode settings on an MPC, use the `delete chassis fpc` command.

Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers

Starting with Junos OS Release 14.2, you can set the license mode for enhanced MPCs such as MPC4E, MPC5E, and MPC6. Configuring the license mode enables you to distinguish between an MPC with an IR license and an MPC with an R license after the MPC is installed on the router. An MPC with an R license supports all the Layer 2, Layer 2.5, and Layer 3 features. An MPC with an IR license offers partial support for these features. For more information about the license variants, see *License Modes for Enhanced MPCs Overview*.

The license mode settings are used only to provide information. You cannot set or alter the license of the MPC when you configure the license mode.

Before you configure the license mode of the MPC, verify the license of the MPC. You will need this information to configure the license mode.

Do not try to set the license mode while the card is rebooting or the following error message will appear: Card not online or TRI0/DPC based.

To configure the license mode for MPCs on MX Series routers:

1. Configure the license mode for the MPC in a specified MPC slot.

If the MPC has an IR license, configure the license mode as IR. If the MPC has an R license, configure the license mode of the MPC as R.

```
[edit]
user@host# set chassis fpc slot-number ir-mode ir-mode
```

2. In configuration mode, verify the configuration, for example:

```
[edit]
user@host# show chassis
fpc 1 {
    ir-mode IR;
}
```


3. After verifying the license mode, commit the changes by using the `commit` statement.

```
[edit]  
user@host# commit
```

Example: Configuring the License Mode for MPC5E

IN THIS SECTION

- [Requirements | 142](#)
- [Overview | 142](#)
- [Configuration | 143](#)
- [Verification | 146](#)

This example describes how to configure the license mode for MPC5E on the MX480 router. It also describes how to remove the license mode settings and reconfigure the license mode settings on a new slot.

Requirements

This example uses the following hardware and software components:

- Junos OS Release 14.2 or later for MX Series routers
- A single MX480 router with MPC5E with R license

Overview

IN THIS SECTION

- [Topology | 143](#)

Configuring the license mode for an MPC enables you to distinguish between an MPC with an IR license and an MPC with an R license after the MPC is installed on the router.

The license mode settings are used only to provide information. You cannot set or alter the license of the MPC when you configure the license mode.

The license mode settings are set specific to each MPC slot. If the MPC is installed in a different slot, or moved to another device, the license mode settings must be reconfigured on the new slot or device. Also, the license mode settings configured previously must be removed. You can view the license mode settings from both configuration mode and operational mode.

Topology

In this example, an MPC5E is installed in slot 4 of an MX480 router and has an R license. The R license indicates that all Layer 2, Layer 2.5, and Layer 3 features are supported on the MPC. You first configure the license mode of the MPC5E in slot 4 to R. After configuring the license mode, you can verify the license mode settings. You then install the MPC5E in slot 2 of the same router. License mode settings are set specific to each MPC slot. Therefore, the license mode setting must be reconfigured. After you move the MPC5E, delete the license mode setting on slot 4 and then reconfigure the license mode setting on slot 2.

Configuration

IN THIS SECTION

- [Configuring the License Mode for MPC5E in Slot 4 | 143](#)
- [Deleting the License Mode for MPC5E in Slot 4 | 144](#)
- [Configuring the License Mode for MPC5E in Slot 2 | 145](#)

To configure the license mode for the MPC5E according to the topology specified in the overview section, perform these tasks:

Configuring the License Mode for MPC5E in Slot 4

Step-by-Step Procedure

To configure the license mode for the MPC5E in slot 4:

1. Configure the license mode R for the MPC5E in slot 4:

```
[edit]
user@host# set chassis fpc 4 ir-mode R
```

2. In configuration mode, verify the configuration.

```
user@host# show chassis fpc 4
pic 0 {
    power off;
}
pic 1 {
    power off;
}
ir-mode R;
```

3. After verifying the license mode, commit the changes by using the `commit` statement.

```
[edit]
user@host# commit
```

Deleting the License Mode for MPC5E in Slot 4

Step-by-Step Procedure

To delete the license mode R for the MPC5E in slot 4:

1. Delete the license mode for the MPC5E.

```
[edit]
user@host# delete chassis fpc 4 ir-mode R
```

2. In configuration mode, verify the configuration.

```
user@host# show chassis fpc 4
pic 0 {
    power off;
}
```

```
pic 1 {
    power off;
}
```

3. After verifying the license mode, commit the changes by using the `commit` statement.

```
[edit]
user@host# commit
```

Configuring the License Mode for MPC5E in Slot 2

Step-by-Step Procedure

To configure the license mode for the MPC5E in slot 2:

1. Configure the license mode R for the MPC5E.

```
[edit]
user@host# set chassis fpc 2 ir-mode R
```

2. In configuration mode, verify the configuration.

```
user@host# show chassis fpc 2
pic 0 {
    power off;
}
pic 1{
    power off;
}
ir-mode R;
```

3. After verifying the license mode, commit the changes by using the `commit` statement.

```
[edit]
user@host# commit
```

Verification

IN THIS SECTION

- [Verifying That License Mode Is Configured for MPC5E in Slot 4 | 146](#)
- [Verifying That the Configured License Mode Is Deleted | 147](#)
- [Verifying That the License Mode Is Configured for MPC5E in Slot 2 | 148](#)

To confirm that you have accurately configured the license mode settings on MPC5E, perform these tasks:

Verifying That License Mode Is Configured for MPC5E in Slot 4

Purpose

To verify that license mode R is configured for the MPC5E in slot 4.

Action

From operational mode, enter the show chassis hardware extensive command.

```
user@host> show chassis hardware extensive
...
FPC 4          REV 30   750-045715   CABM2612          MPC5E 3D Q 24XGE+6XLGE
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-045715      S/N:              CABM2612
Assembly ID:   0x0b8a          Assembly Version:  01.30
Date:          08-27-2013      Assembly Flags:    0x00
Version:       REV 30          CLEI Code:         PROTOXCLEI
ID: MPC5E 3D Q 24XGE+6XLGE     FRU Model Number:  PROTO-ASSEMBLY
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 fe 0b 8a 01 1e 52 45 56 20 33 30 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 34 35 37 31 35 00 00
  Address 0x20: 53 2f 4e 20 43 41 42 4d 32 36 31 32 00 1b 08 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
```

```

Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff
R/IR Mode: R
...

```

Meaning

License mode R is configured for the MPC5E in slot 4.

Verifying That the Configured License Mode Is Deleted

Purpose

To verify that the configured license mode is deleted.

Action

From operational mode, enter the show chassis hardware extensive command.

```

user@host> show chassis hardware extensive
...
FPC 4          REV 30   750-045715   CABM2612          MPC5E 3D Q 24XGE+6XLGE
Jedec Code:    0x7fb0          EEPROM Version:   0x02
P/N:           750-045715      S/N:             CABM2612
Assembly ID:   0x0b8a          Assembly Version: 01.30
Date:          08-27-2013      Assembly Flags:   0x00
Version:       REV 30          CLEI Code:        PROTOXCLEI
ID: MPC5E 3D Q 24XGE+6XLGE     FRU Model Number: PROTO-ASSEMBLY
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 fe 0b 8a 01 1e 52 45 56 20 33 30 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 34 35 37 31 35 00 00
  Address 0x20: 53 2f 4e 20 43 41 42 4d 32 36 31 32 00 1b 08 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
  Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff

```

```
Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff
...
```

Meaning

The license mode setting has been removed for the MPC5E in slot 4.

Verifying That the License Mode Is Configured for MPC5E in Slot 2

Purpose

To verify that license mode R is configured for the MPC5E in slot 2.

Action

From operational mode, enter the show chassis hardware extensive command.

```
user@host> show chassis hardware extensive
...
FPC 2          REV 30   750-045715  CABM2612          MPC5E 3D Q 24XGE+6XLGE
Jedec Code:    0x7fb0          EEPROM Version:    0x02
P/N:           750-045715      S/N:              CABM2612
Assembly ID:   0x0b8a          Assembly Version:  01.30
Date:          08-31-2013      Assembly Flags:    0x00
Version:       REV 30          CLEI Code:         PROTOXCLEI
ID: MPC5E 3D Q 24XGE+6XLGE     FRU Model Number:  PROTO-ASSEMBLY
Board Information Record:
  Address 0x00: ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
I2C Hex Data:
  Address 0x00: 7f b0 02 fe 0b 8a 01 1e 52 45 56 20 33 30 00 00
  Address 0x10: 00 00 00 00 37 35 30 2d 30 34 35 37 31 35 00 00
  Address 0x20: 53 2f 4e 20 43 41 42 4d 32 36 31 32 00 1b 08 07
  Address 0x30: dd ff ff ff ff ff ff ff ff ff ff ff ff ff ff
  Address 0x40: ff ff ff ff 01 50 52 4f 54 4f 58 43 4c 45 49 50
  Address 0x50: 52 4f 54 4f 2d 41 53 53 45 4d 42 4c 59 00 00 00
  Address 0x60: 00 00 00 00 00 00 41 30 30 ff ff ff ff ff ff ff
  Address 0x70: ff ff ff c2 ff ff ff ff ff ff ff ff ff ff ff
R/IR Mode: R
...
```

Meaning

License mode R is configured for the MPC5E in slot 2.

Junos OS Feature License Keys

IN THIS SECTION

- [Release-Tied License Keys and Upgrade Licenses on MX Series Routers | 149](#)
- [Licensable Ports on MX5, MX10, and MX40 Routers | 150](#)
- [Port Activation on MX104 Routers | 152](#)

Some Junos OS software features require a license to be activated. To enable each licensed feature, you must purchase, install, manage, and verify a license key that corresponds to the licensed feature.

Release-Tied License Keys and Upgrade Licenses on MX Series Routers

The Junos OS licensing infrastructure currently associates a license feature with attributes such as date, platform, and validity. In addition to these attributes, for MX Series routers running Junos OS Release 12.2 and later, a licensed feature can be associated with a release number at the time of generating the license key. This type of release-tied license key is used to validate a particular licensed feature while attempting a software upgrade. The upgrade process terminates if the release number in the license key is earlier than the Junos OS release number to which the system is being upgraded.

Additionally, an upgrade license key can be generated for a release-tied licensed feature. An upgrade license key is used for carrying forward a capacity license to the upgrade release. Although an upgrade license might be an acceptable license on the current release, it does not add to the existing capacity limit. The capacity added in the upgrade license key is valid for the upgrade software release only.

The release number embedded in the license key indicates the maximum release number up to which Junos OS can be upgraded.

As an example, assume that your system is running Junos OS Release 12.2 and is using the scale-subscriber licensed feature with a later release-tied upgrade license key installed. If you request a

software upgrade to the later release of Junos OS, the software upgrade operation fails and the following error message is displayed:

```
mgd: error: No valid upgrade license found for feature 'scale-subscriber'.  
Aborting Software upgrade.  
Validation failed
```

In this example, to successfully upgrade to the later release of Junos OS, the release number included in the upgrade license key should be greater than or equal to the later release number. Also, you can perform software upgrades up to the previous release without any additional license keys to retain the existing scale limit.

When you install a release-tied license, the following apply:

- You can purchase an upgrade capacity license only if a base capacity license for the same scale-tier has already been generated or purchased.
- You cannot install an upgrade license if the capacity does not match any of the existing base capacity licenses on the system.
- The license installation fails when you install a lower release number license key on a higher software release number.
- A release-tied license can be installed on a Junos OS release number that is lower than or equal to the release number included in the license key. For example, a 12.2 license key is valid on Junos OS Release 12.1.
- An upgrade license is valid only on the target release number specified in the license key, but can be installed on an earlier Junos OS release. For example, a 4 K scale-tier upgrade license for Junos OS Release 12.2 can be installed on an earlier release, and the installed count of licenses remains unaltered.
- Release-tied licenses of the previous release are not deleted on upgrading Junos OS to a newer release version.

Licensable Ports on MX5, MX10, and MX40 Routers

Starting with Junos OS Release 12.2, license keys are available to enhance the port capacity on MX5, MX10, and MX40 routers up to the port capacity of an MX80 router. The MX5, MX10, and MX40 routers are derived from the modular MX80 chassis with similar slot and port assignments, and provide all functionality available on an MX80 router, but at a lower capacity. Restricting port capacity is achieved by making a set of MIC slots and ports licensable. MICs without a license are locked, and are unlocked or made usable by installing appropriate upgrade licenses.

The base capacity of a router is identified by the Ideeprom assembly ID (I2C ID), which defines the board type. However, the Junos OS licensing infrastructure allows the use of restricted ports without a license for a grace period of 30 days. After the grace period expires, the router reverts back to the base capacity if no upgrade license is purchased and installed for the locked ports. The I2C ID along with an upgrade license determine the final capacity of an MX5, MX10, or MX40 router.

The MX5, MX10, MX40, and MX80 routers support the following types of MICs:

- A built-in 10-Gigabit Ethernet MIC with four 10-Gigabit Ethernet ports
- Two front-pluggable MICs

A feature ID is assigned to every license upgrade for enhancing port capacity. [Table 55 on page 151](#) displays the chassis types and their associated port capacity, I2C ID, base capacity, feature ID, feature name, and the final capacity after a license upgrade.

Table 55: Upgrade Licenses for Enhancing Port Capacity

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
MX5	20G	0x556	Slot 1 <ul style="list-style-type: none"> • 1/MIC0 	f1—MX5 to MX10 upgrade	Slot 1 and 2 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1
MX10	40G	0x555	Slot 1 and 2 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1 	f2—MX10 to MX40 upgrade	Slot 2 and first 2 ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC1 • First 2 ports on 0/MIC0

Table 55: Upgrade Licenses for Enhancing Port Capacity (Continued)

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
MX40	60G	0x554	Slot 1, Slot 2 and first 2 ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC0 • 1/MIC1 • First 2 ports on 0/MIC0 	f3—MX40 to MX80 upgrade	Slot 2 and all ports on Slot 0 <ul style="list-style-type: none"> • 1/MIC1 • All 4 ports on 0/MIC0

When installing an upgrade license for enhancing port capacity on MX5, MX10 and MX40 routers, consider the following:

- To upgrade an MX5 router to MX80 router capacity, licenses for all three features (f1, f2, f3) must be installed. All three features can be provided in a single license key.
- To upgrade an MX10 router to MX40 router capacity, installing a license key with f2 feature is sufficient.
- Non-applicable feature IDs in a license key reject the upgrade license. For example:
 - An f1 feature ID on an MX10 upgrade license key rejects the license.
 - Feature IDs f1 and f2 on an MX40 upgrade license key reject the entire license.

Port Activation on MX104 Routers

Starting with Junos OS Release 13.3, license keys are available to activate the ports on the MX104 router. MX104 routers have four built-in ports. By default, in the absence of valid licenses, all four built-in ports are deactivated. By installing licenses, you can activate any two of the four or all of the four built-in ports. For instance, you can install a license to activate the first two built-in ports (xe-2/0/0 and xe-2/0/1) or you can install a license to activate the next two built-in ports (xe-2/0/2 and xe-2/0/3). You can also install a license to activate all four built-in ports (xe-2/0/0, xe-2/0/1, xe-2/0/2, and xe-2/0/3). If you have already activated two of the built-in ports, you can install an additional license to activate the other two built-in ports on the MX104 router.

A feature ID is assigned to every license for activating the built-in ports on the MX104 router. The port license model with the feature ID is described in [Table 56 on page 153](#).

Table 56: Port Activation License Model for MX104 Routers

Feature ID	Feature Name	Functionality
F1	MX104 2X10G Port Activate (0 and 1)	Ability to activate first two built-in ports (xe-2/0/0 and xe-2/0/1)
F2	MX104 2X10G Port Activate (2 and 3)	Ability to activate next two built-in ports (xe-2/0/2 and xe-2/0/3)

Both the features are also provided in a single license key for ease of use. To activate all four ports, you must either install the licenses for both the features listed in [Table 56 on page 153](#) or the single license key for both features. If you install the single license key when feature IDs F1 and F2 are already installed, the license does not get rejected. Also, MX104 routers do not support the graceful license expiry policy. A graceful license expiry policy allows the use of a feature for a certain period of time (usually a grace period of 30 days), and reverts if the license for that feature is not installed after the grace period.

Subscriber Access Licensing Overview

IN THIS SECTION

- [Subscriber Secure Policy Licensing Requirements | 155](#)

To enable some Juniper Networks Junos OS features or router scaling levels, you might have to purchase, install, and manage separate software license packs. The presence on the router of the appropriate software license keys (passwords) determines whether you can configure and use certain features or configure a feature to a predetermined scale.

You need only one license if the DHCP dual stack session running with a single SDB session. To configure the single SDB session, use the `classification-key` option in the `edit system services dhcp-local-server` hierarchy.

[Table 57 on page 154](#) describes number of subscriber interface and license required on subscriber access models.

Table 57: Number of Licenses Required per Access Model

Access Model	Number of Licenses Required
CVLAN DHCPv4	1
CVLAN PPPoEv4	1
CVLAN Dual Stack DHCP	1 (single SDB session) 2 (two SDB session)
CVLAN Dual Stack PPPoE	1
Pseudowire Headend Termination (PWHT) DHCPv4	1
PWHT PPPoEv4	1
PWHT Dual Stack DHCP	1 (single SDB session) 2 (dual SDB session)
PWHT Dual Stack PPPoE	1
Agent circuit identifier (ACI) DHCPv4	Number of sessions with same ACI
ACI PPPoEv4	Number of sessions with same ACI
Layer 2 Tunneling Protocol (L2TP) Point-to-Point Protocol (PPP) or L2TP access concentrator (LAC)	1
L2TP Point-to-Point Protocol (PPP) or L2TP network server (LNS)	1
L2TP Dual Stack PPP or LNS	1

Table 57: Number of Licenses Required per Access Model (Continued)

Access Model	Number of Licenses Required
L2TP tunnel switch (LTS) PPPv4	1
LTS version Dual Stack PPP	1
Wi-Fi access gateway (WAG) DHCPv4	1
WAG Dual Stack DHCP	1 (single SDB session) 2 (dual SDB session)
Hybrid access gateway (HAG) generic routing encapsulation (GRE)v4	1
Hybrid access gateway (HAG) Dual Stack GRE	1 (single SDB session) 2 (two SDB session)
Fixed wireless	1

For the latest information about subscriber access licensing, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

Subscriber Secure Policy Licensing Requirements

To enable and use subscriber secure policy, you must install and properly configure the Subscriber Secure Policy license.

SEE ALSO

Configuring the Router to Strictly Enforce the Subscriber Scaling License

Address-Assignment Pools Licensing Requirements

The address-assignment pool feature is part of the Junos OS Subscriber Management Feature Pack license. You must install and properly configure the license to meet the requirements for using the address-assignment pool feature.

Release History Table

Release	Description
16.1R1	Starting in Junos OS Release 16.1R1, after the completion of the 30 day grace period, DHCP bindings on MX series devices are limited to 10. This counts against broadband scale licenses S-MX104-SA-FP and S-SA-4K.
16.1	Starting in Junos OS Release 16.1, there is also a base variant, making a total of three licence variants.
14.2	Starting with Junos OS Release 14.2, you can set the license mode for enhanced MPCs such as MPC4E, MPC5E, and MPC6.

RELATED DOCUMENTATION

| [Configuring the JET Application and its License on a Device Running Junos OS | 167](#)

Licenses for vMX

IN THIS SECTION

- [vMX Licenses for AWS | 156](#)
- [vMX Licenses for KVM and VMware | 158](#)
- [Managing vMX Licenses | 160](#)

vMX Licenses for AWS

Licenses are required to use vMX features in the Amazon Bring Your Own License (BYOL) model on AWS. When you order licenses, this information is bound to a customer ID. If you did not order the licenses, contact your account team or Juniper Networks Customer Care for assistance.

The vMX licenses are based on application packages and processing capacity. [Table 58 on page 157](#) describes the features available with application packages.

Table 58: Application Packages for Licenses

Application Package	Features
BASE	IP routing with up to 256,000 routes in the forwarding table Basic Layer 2 functionality, Layer 2 bridging and switching
ADVANCE	Features in the BASE application package, plus: IP routing with up to 2,000,000 routes in the forwarding table IP and MPLS switching for unicast and multicast applications Layer 2 features—Layer 2 VPN, VPLS, EVPN, and Layer 2 Circuit
PREMIUM	Features in the BASE and ADVANCE application packages, plus: IP routing with up to 4,000,000 routes in the forwarding table Layer 3 VPN for IP and multicast

An application package is associated with a bandwidth license. Bandwidth licenses that are not associated with a specific application package apply to all application packages. Bandwidth licenses are additive. For example, if you add a 500 Mbps license and a 1 Gbps license, you are entitled to use 1.5 Gbps of capacity.

vMX Evaluation License

Juniper Networks provides a 60-day evaluation license for vMX. On AWS, you can try one instance for 60 days with the BYOL model without incurring hourly software charges for this instance but AWS infrastructure charges still apply.

For information about the 60-day evaluation license for vMX, see <https://www.juniper.net/us/en/dm/free-vmx-trial/>.

vMX License Model Numbers

The Juniper Networks licenses are based on SKUs, which represent lists of features that the license enables.

The following SKUs are supported for vMX Bring Your Own License (BYOL):

- VMX-100M-1YR
- VMX-250M-1YR
- VMX-500M-1YR
- VMX-PRM-1G-1YR
- VMX-PRM-5G-1YR
- VMX-PRM-10G-1YR

vMX Licenses for KVM and VMware

Licenses are required for using vMX features. When you order licenses, this information is bound to a customer ID. If you did not order the licenses, contact your account team or Juniper Networks Customer Care for assistance. When you order a license, you receive instructions for generating license activation keys on the [Juniper Networks License Management System](#).

The vMX licenses are based on application packages and processing capacity. [Table 59 on page 158](#) describes the features available with application packages.

Table 59: Application Packages for Licenses

Application Package	Features
BASE	IP routing with 256,000 routes in the forwarding table
ADVANCE	Features in the BASE application package IP routing with up to 2,000,000 routes in the forwarding table 16 instances of Layer 3 VPN
PREMIUM	Features in the BASE and ADVANCE application packages IP routing with up to 4,000,000 routes in the forwarding table Layer 3 VPN for IP and multicast

[Table 60 on page 159](#) describes the queuing licenses.

Table 60: vMX Queuing License

Queuing License SKU	Description
VMX-1G-Q	1 Gbps queuing
VMX-5G-Q	5 Gbps queuing
VMX-10G-Q	10 Gbps queuing
VMX-40G-Q	40 Gbps queuing
VMX-100G-Q	100 Gbps queuing

An application package is associated with a bandwidth license. vMX provides egress bandwidth in the following capacities: 100 Mbps, 250 Mbps, 500 Mbps, 1 Gbps, 5 Gbps, 10 Gbps, and 40 Gbps. Bandwidth licenses that are not associated with a specific application package apply to all application packages. Bandwidth licenses are additive. For example, if you add a 500 Mbps license and a 1 Gbps license, you are entitled to use 1.5 Gbps of capacity.

You can download the vMX software BASE application package with 1 Mbps bandwidth and evaluate it without a license. To use additional features, you must order the appropriate license. If you delete all valid licenses, you can only use the BASE application package with 1 Mbps bandwidth.

Supported in Junos OS Release 15.1F4 you can download the vMX software BASE application package with 1 Mbps bandwidth and evaluate it for 30 days without a license. To use additional features beyond the 30 days, you must order the appropriate license.

If you upgrade from a BASE package license to an ADVANCE or PREMIUM package license or if you downgrade from an ADVANCE or PREMIUM package license to a BASE package license, you must restart the routing protocol process. If your configuration has logical systems, you must restart the routing protocol process for all logical systems.

If you need to move your vMX installation to another host, you must remove vMX from the current host before installing vMX and adding the license on the new host.

Starting in Junos OS Release 17.2 with the appropriate vMX PREMIUM license, you can evaluate vBNG without a vBNG subscriber scale license for 30 days. After 30 days, you are limited to 10 subscriber sessions.

To deploy a vBNG instance, you must purchase these licenses:

- vMX PREMIUM application package license with 1 Gbps, 5 Gbps, 10 Gbps, or 40 Gbps bandwidth
- vBNG subscriber scale license with 1000, 10 thousand, 100 thousand, or 1 million subscriber sessions for one of these tiers:

Table 61: vBNG Subscriber Scale License Tiers

Tier	Description
Introductory	L2TP features including L2TP LNS services, secure policy, service activation and deactivation
Preferred	Features in the Introductory tier, and DHCP subscriber services, PPP/LAC subscriber services, DHCP relay and DHCP local server
Elite	Features in the Preferred tier, and pseudowire head end termination, Gx, and Gy

Managing vMX Licenses

IN THIS SECTION

- [Adding a License | 161](#)
- [Deleting a License | 162](#)

You must add a license to use vMX features. The licensed features are enforced based on the license you purchased.

Starting in Junos OS Release 17.4 for AWS, you must add a license if you are using vMX in the Bring Your Own License (BYOL) model.

If you upgrade from a BASE package license to an ADVANCE or PREMIUM package license or if you downgrade from an ADVANCE or PREMIUM package license to a BASE package license, you must restart the routing protocol process (`restart routing`). If your configuration has logical systems, you must restart the routing protocol process for all logical systems (`restart routing logical-system logical-system-name`).

If you need to move your vMX installation to another host, you must remove vMX from the current host before installing vMX and adding the license on the new host.

Adding a License

To add a license key to the vMX:

1. Copy the license activation key file to the VCP and add the license key by specifying the filename.

```
user@vmx> request system license add filename
```

Or, you can copy and paste the license activation key directly to add the license key. For example:

```
user@vmx> request system license add terminal
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX
```

Starting from Junos OS Evolved Release 21.2R2, you can view additional information field as follows.

```
user@vmx> request system license add terminal
XXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX

information: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX: Ignoring the license for feature id:
272(License for activating IP Tunnels scale).This feature is not used by your product.
XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX: successfully added
XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX: successfully added
add license complete (no errors)
Syslog :

May 17 04:47:32 ak2svlvmx license-check[28562]: LICENSE_INVALIDE_FEATURE_ID: Ignoring the
key for unknown feature id 0
```

2. Verify that the license is installed. VMX-BANDWIDTH indicates the licensed bandwidth (in Mbps) and VMX-SCALE indicates the application package. (VMX-SCALE 1 is the BASE package, VMX-SCALE 2 is the ADVANCE package, and VMX-SCALE 3 is the PREMIUM package.) This information

is also listed as Features in the Licenses installed section. For example, this output indicates that the 40G perpetual license for the PREMIUM application package is installed.

```
user@vmx> show system license
```

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
VMX-BANDWIDTH	40000	40000	0	permanent
VMX-SCALE	3	3	0	permanent

Licenses installed:

License identifier: JUNOS640113

License version: 4

Software Serial Number: XXXXXXX

Customer ID: vMX-Juniper

Features:

vmx-bandwidth-40g - vmx-bandwidth-40g
permanent

vmx-feature-premium - vmx-feature-premium
permanent

3. Verify the configured bandwidth for PFE traffic matches the licensed bandwidth (VMX-BANDWIDTH). The current and average bandwidth are also displayed.

```
user@vmx> show pfe statistics traffic bandwidth
```

```
Configured Bandwidth      : 40000000000 bps
Bandwidth                  : 0 bps
Average Bandwidth         : 0 bps
```

Deleting a License

To delete a vMX license:

1. Display the installed licenses.

```
user@vmx> show system license installed
```

```
License identifier: JUNOS640113
License version: 4
Features:
  vmx-bandwidth-40g - vmx-bandwidth-40g
    permanent
  vmx-feature-premium - vmx-feature-premium
    permanent
```

2. Delete the license.

```
user@vmx> request system license delete license-identifier
```

For example:

```
user@vmx> request system license delete JUNOS640113
```

3. Verify that the license is deleted.

```
user@vmx> show system license
```

```
License usage:
```

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent

```
Licenses installed: none
```

Release History Table

Release	Description
17.4	Starting in Junos OS Release 17.4 for AWS, you must add a license if you are using vMX in the Bring Your Own License (BYOL) model.

Release History Table

Release	Description
17.4	Starting in Junos OS Release 17.4 for AWS, you must add a license if you are using vMX in the Bring Your Own License (BYOL) model.
17.2	Starting in Junos OS Release 17.2 with the appropriate vMX PREMIUM license, you can evaluate vBNG without a vBNG subscriber scale license for 30 days. After 30 days, you are limited to 10 subscriber sessions.

License Configuration

IN THIS SECTION

- [Installing Junos OS Licenses on Virtual Chassis Member Routers | 164](#)
- [Configuring the JET Application and its License on a Device Running Junos OS | 167](#)
- [Configuring the Router to Strictly Enforce the Subscriber Scaling License | 169](#)

Installing Junos OS Licenses on Virtual Chassis Member Routers

IN THIS SECTION

- [Installing Junos OS Licenses on Members | 165](#)
- [Reinstalling Junos OS Licenses on New Members | 166](#)

To enable some Junos OS features or router scaling levels, you might have to purchase, install, and manage separate software license packs. The presence on the router of the appropriate software license keys (passwords) determines whether you can configure and use certain features or configure a feature to a predetermined scale.

Before you configure an MX Series Virtual Chassis, install the following Junos OS software licenses on each MX Series router to be configured as a member of the Virtual Chassis:

- **MX Virtual Chassis Redundancy Feature Pack**—You must install a unique MX Virtual Chassis Redundancy Feature Pack for each member router in the Virtual Chassis. If you issue the request `virtual-chassis member-id set`, request `virtual-chassis member-id delete`, request `virtual-chassis vc-port set`, or request `virtual-chassis vc-port delete` command to set or delete member IDs or Virtual Chassis ports without first installing an MX Virtual Chassis Redundancy Feature Pack on both member routers, the software displays a warning message that you are operating without a valid Virtual Chassis software license.

There is no separate license for Virtual Chassis like there is for Virtual Chassis Fabric.

- **Junos OS feature licenses**—Purchase and install the appropriate Junos OS feature licenses to enable use of a particular software feature or scaling level in your network. You must install the required feature licenses on each member router in the Virtual Chassis.

Sometimes, if a Virtual Chassis member is newly installed, the licenses are lost, creating a situation in which any new license installed in primary Routing Engine will get synced across all members, but any previously installed license (any license installed before the newly installed member) does not get synced. In this case, you must reinstall (delete and add) licenses in the primary Routing Engine if a Virtual Chassis member is replaced. This procedure will sync all installed licenses to all members.

This topic covers the following procedures:

Installing Junos OS Licenses on Members

Before you begin:

- Prepare your site for the Virtual Chassis configuration.

See [Preparing for a Virtual Chassis Configuration](#).

- Familiarize yourself with the procedures for installing and managing Junos OS licenses.

To install Junos OS licenses on each member router in the Virtual Chassis:

1. Install the required licenses on the MX Series router to be designated as the protocol primary for the Virtual Chassis.
 - a. Install the MX Virtual Chassis Redundancy Feature Pack.
 - b. Install the Junos OS feature licenses required for your software feature or scaling level.

2. Install the required licenses on the MX Series router to be designated as the protocol backup for the Virtual Chassis.
 - a. Install the MX Virtual Chassis Redundancy Feature Pack.
 - b. Install the Junos OS feature licenses required for your software feature or scaling level.
3. (Optional) Verify the license installation on each member router.

For example:

```
user@host> show system license
```

License usage:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	0	1	0	permanent
subscriber-authentication	0	1	0	permanent
subscriber-address-assignment	0	1	0	permanent
subscriber-vlan	0	1	0	permanent
subscriber-ip	0	1	0	permanent
scale-subscriber	0	256000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
virtual-chassis	0	1	0	permanent

Reinstalling Junos OS Licenses on New Members

Before adding the new Routing Engine to the Virtual Chassis, install required operational packages. This is like the first procedure, Installing Junos OS Licenses on Members.

When you need to install a new Virtual Chassis member router, use this procedure to ensure all installed licenses are synced to all members.

To sync Junos OS licenses from primary to newly replaced virtual chassis members:

1. On the primary router, exit the CLI to switch to user root.

```
{master:member0-re1}
```

```
user@host> start shell user root
```

```
{master:member0-re1}
```

```
Password:
```

2. Enter the root password and go back into the CLI.

```
root@host% cli
```

3. Copy the licenses from the primary member to the Routing Engine that does not have licenses installed (that is, the newly installed Routing Engine).

```
{master:member0-re1}
```

```
user@host> file copy /config/license/*.lic member0-re0:/config/license/
{master:member0-re1}
user@host>
```

RELATED DOCUMENTATION

License Modes for Enhanced MPCs Overview

Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers

Software Features That Require Licenses on MX Series Routers Only

Configuring the JET Application and its License on a Device Running Junos OS

IN THIS SECTION

- [Configuring a Python Application to Run on Junos OS | 168](#)
- [Configuring a C or C++ Application to Run on Junos OS | 168](#)

Before you can start a JET application on a device running Junos OS, first determine if you must configure the license. License configuration for JET applications is required only if you are deploying on-box applications written in C or C++ and built using the Juniper Extension Toolkit (JET) development environment. This task is not required for simple Python JET applications, which do not require licensing.

This topic describes how to configure two types of JET applications to run on Junos OS: Python applications and C or C++ applications.

Configuring a Python Application to Run on Junos OS

To configure a JET Python application to run on a device running Junos OS and its license:

1. (Optional if Python application is signed) Issue the **set system scripts language (python | python3)** command.

```
[edit]
user@device# set system scripts language python
```

If you do not include the `language python` or `language python3` statement, you cannot execute unsigned Python scripts on the device.

Junos OS supports using symbolic links for files in the `/var/db/scripts/jet` directory, but the device will only execute the script at the target location if it is signed.

2. At the `[edit system extensions]` hierarchy level, configure the application's provider's ID. The same provider license must be used to configure a JET application to run on Junos OS as was used to package it.

```
[edit system extensions]
user@device# set providers xyzcompany
```

3. Configure the license type and deployment scope.

```
[edit system extensions]
user@device# set providers xyzcompany license-type juniper deployment-scope commercial
```

4. Commit the configuration.

```
[edit system extensions]
user@device# top
[edit]
user@device# commit
```

Configuring a C or C++ Application to Run on Junos OS

To configure a JET C or C++ application to run on a device running Junos OS and its license:

1. Configure the application's provider's ID, license type, and deployment scope. The same provider license must be used to configure a JET application to run on Junos OS as was used to package it.

The following application example was packaged using chef as the provider license:

```
[edit]
user@device# set system extensions providers chef license-type juniper deployment-scope
commercial
```

2. Commit the configuration and exit to operational mode.

```
[edit]
user@device# commit
commit complete
```

```
[edit]
user@device# exit
user@device>
```

RELATED DOCUMENTATION

JET Overview

[License Modes for Enhanced MPCs Overview | 139](#)

[Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers | 141](#)

[Software Features That Require Licenses on MX Series Routers Only | 122](#)

Configuring the Router to Strictly Enforce the Subscriber Scaling License

To enable some Juniper Networks Junos OS features or router scaling levels, you might have to purchase, install, and manage separate software license packs. The presence on the router of the appropriate software license keys (passwords) determines whether you can configure and use certain features or configure a feature to a predetermined scale.

For the latest information about subscriber access licensing, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

Subscriber Secure Policy Licensing Requirements

To enable and use subscriber secure policy, you must install and properly configure the Subscriber Secure Policy license.

You can configure the router to strictly enforce the subscriber scaling feature, which is part of the Junos Subscriber Access Feature Pack license. The subscriber scaling feature specifies the maximum number of subscribers that can be logged in at any one time.

When you configure strict scaling license support, the router performs the following actions:

- Strictly enforces the subscriber scaling license and does not allow any grace period. When the number of logged-in subscriber reaches the number allowed by the scaling license, no additional subscribers are allowed to log in.
- Creates the informational log message, "90 percent of installed subscriber scale licenses in use" in `/var/log/messages`, to inform you when you have 10 percent of the total allowed licenses remaining. The router clears this condition when license usage falls below 90 percent. The log message is created again if the 90 percent usage is later reached.

To configure the router to strictly enforce the subscriber scaling license:

1. Specify that you want to configure subscriber management.

```
[edit system services]
user@host# edit subscriber-management
```

2. Configure the router to enforce the scaling license.

```
[edit system services subscriber-management]
user@host# set enforce-strict-scale-limit-license
```

CHAPTER 8

Licenses for Switching Devices

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- Licenses for EX Series | 187
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Understanding Software Licenses for EX Series Switches

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To enable and use some of the Juniper Networks operating system (Junos OS) features, you must purchase, install, and manage separate software licenses. If the switch has the appropriate software license, you can configure and use these features.

The Junos OS feature license (that is, the purchased authorization code) is universal. However, to conform to Junos OS feature licensing requirements, you must install a unique license key (a combination of the authorization code and the switch's serial number) on each switch.

For a *Virtual Chassis* deployment, two license keys are recommended for redundancy—one for the device in the primary role and the other for the device in the backup role:

- In an EX8200 Virtual Chassis, the devices in the primary and backup roles are always XRE200 External Routing Engines.
- In all other Virtual Chassis, the devices in the primary and backup roles are switches.

You do not need additional license keys for Virtual Chassis member switches that are in the linecard role or for the redundant Routing Engine (RE) modules or the redundant Switch Fabric and Routing Engine (SRE) modules in an EX8200 member switch.

This topic describes:

Purchasing a Software Feature License

The following sections list features that require separate licenses. To purchase a software license, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). You will be asked to supply the chassis serial number of your switch; you can obtain the serial number by running the `show chassis hardware` command.

You are required to provide the 12-digit serial number when purchasing a license for an XRE200 External Routing Engine in an EX8200 Virtual Chassis.

The serial number listed on the XRE200 External Routing Engine serial ID label is 16 digits long. Use the last 12 digits of the 16-digit serial number to purchase the license.

You can use the `show chassis hardware` command output to display the 12-digit serial number of the XRE200 External Routing Engine.

License Key Components for the EX Series Switch

When you purchase a license for a Junos OS feature that requires a separate license, you receive a license key.

A license key consists of two parts:

- License ID—Alphanumeric string that uniquely identifies the license key. When a license is generated, it is given a license ID.
- License data—Block of binary data that defines and stores all license key objects.

For example, in the following typical license key, the string Junos204558 is the license ID, and the trailing block of data is the license data:

```
XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxx
```

The license data defines the device ID for which the license is valid and the version of the license.

Features Requiring a License on EX2200 Switches

For EX2200 switches, the following features can be added to basic Junos OS by installing an enhanced feature license (EFL):

- Bidirectional Forwarding Detection (BFD)
- Connectivity fault management (IEEE 802.1ag)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- OSPFv1/v2 (with four active interfaces)
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Q-in-Q tunneling (IEEE 802.1ad)
- Real-time performance monitoring (RPM)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

[Table 62 on page 173](#) lists the EFLs that you can purchase for EX2200 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX2200 switch.

Table 62: Junos OS Part Number on EX2200 Switches

Switch Model	Part Number
EX2200-C-12P-2G	EX-12-EFL
EX2200-C-12T-2G	

Table 62: Junos OS Part Number on EX2200 Switches (Continued)

Switch Model	Part Number
EX2200-24T-4G	EX-24-EFL
EX2200-24P-4G	
EX2200-24T-DC-4G	
EX2200-48T-4G	EX-48-EFL
EX2200-48P-4G	

Features Requiring a License on EX2300 Switches

EX2300 switches have enhanced feature licenses (EFLs).

To use the following features on the EX2300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- IPv6 routing protocols: Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3
- Multicast Source Discovery protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPF v2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Virtual Router Redundancy Protocol (VRRP)

[Table 63 on page 175](#) lists the EFLs that you can purchase for EX2300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX2300 switch.

Table 63: Junos OS Part Number on EX2300 Switches

Switch Model	Part Number
EX2300-C-12P EX2300-C-12T	EX-12-EFL
EX2300-24T EX2300-24P EX2300-24MP	EX-24-EFL
EX2300-48T EX2300-48P EX2300-48MP	EX-48-EFL

Virtual Chassis feature support on EX2300 switches:

- The EX-12-EFL SKU includes the EX2300-VC (Virtual Chassis feature) license. EX2300-C-12P and EX2300-C-12T switches do not require an additional EX2300-VC license if you purchase the EFL license.
- EX2300-24T, EX2300-24P, EX2300-24MP, EX2300-48T, EX2300-48P, and EX2300-48MP switches do not include the EX2300-VC (Virtual Chassis feature). If you want to use Virtual Chassis feature, you must purchase a separate EX2300-VC license for each EX2300 switch.

Features Requiring a License on EX3300 Switches

Two types of licenses are available on EX3300 switches: enhanced feature licenses (EFLs) and advanced feature licenses (AFLs).

To use the following features on the EX3300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- IPv6 routing protocols: Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3, virtual router support for unicast and filter-based forwarding (FBF)
- Intermediate System-to-Intermediate System (IS-IS)
- OSPFv1/v2

- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Q-in-Q tunneling (IEEE 802.1ad)
- Real-time performance monitoring (RPM)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 64 on page 176 lists the EFLs that you can purchase for EX3300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX3300 switch.

Table 64: Junos OS Part Number on EX3300 Switches

Switch Model	Part Number
EX3300-24T EX3300-24P EX3300-24T-DC	EX-24-EFL
EX3300-48T EX3300-48T-BF EX3300-48P	EX-48-EFL

To use the following feature on EX3300 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- IPv6 routing protocols: IPv6 BGP and IPv6 for MBGP
- Virtual routing and forwarding (VRF) BGP

Table 65 on page 177 lists the AFLs that you can purchase for EX3300 switch models. For EX3300 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX3300 switch.

Table 65: Junos OS AFL Part Number on EX3300 Switches

Switch Model	AFL Part Number
EX3300-24T EX3300-24P EX3300-24T-DC	EX-24-AFL
EX3300-48T EX3300-48T-BF EX3300-48P	EX-48-AFL

Features Requiring a License on EX3400 Switches

EX3400 switches has an enhanced feature licenses (EFLs) and MACSec license.

To use the following features on the EX3400 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- IPv6 routing protocols: : Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3, virtual router support for unicast and filter-based forwarding (FBF)
- Multicast Source Discovery Protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPF v2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

[Table 66 on page 178](#) lists the EFLs that you can purchase for EX3400 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX3400 switch.

Table 66: Junos OS Part Number on EX3400 Switches

Switch Model	Part Number
EX3400-24T EX3400-24P	EX-24-EFL
EX3400-48P EX3400-48T EX3400-48T-AFI EX3400-48T-DC EX3400-48T-DC-AFI	EX-48-EFL

To use the following features on the EX3400 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)

[Table 67 on page 178](#) lists the AFLs that you can purchase for EX3400 switch models. For EX3400 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX3400 switch.

Table 67: Junos OS Part Number on EX3400 Switches

Switch Model	Part Number
EX3400-24T EX3400-24P	EX-24-AFL
EX3400-48P EX3400-48T EX3400-48T-AFI EX3400-48T-DC EX3400-48T-DC-AFI	EX-48-AFL

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX3400 switches.

Table 68 on page 179 lists the MACsec model number that you can purchase for EX3400 switch models.

Table 68: Junos OS MACsec model number on EX3400 Switches

Switch Model	Model Number
EX3400	EX-QFX-MACSEC-ACC

Features Requiring a License on EX4300 Switches

Two types of licenses are available on EX4300 switches: enhanced feature licenses (EFLs) and advanced feature licenses (AFLs).

To use the following features on the EX4300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- Connectivity fault management (IEEE 802.1ag)
- Filter-based forwarding (FBF)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- Multicast Source Discovery Protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPFv2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

[Table 69 on page 180](#) lists the EFLs that you can purchase for EX4300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX4300 switch.

Table 69: Junos OS Part Number on EX4300 Switches

Switch Model	Part Number
EX4300-24T EX4300-24P	EX4300-24-EFL
EX4300-48MP EX4300-48P EX4300-48T EX4300-48T-AFI EX4300-48T-DC EX4300-48T-DC-AFI	EX4300-48-EFL
EX4300-32F EX4300-32F-DC	EX4300-32F-EFL

To use the following features on EX4300 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)
- Ethernet VPN (EVPN) with Virtual Extensible LAN (VXLAN)
 - Supported only on EX4300-48MP switch.
 - Requires the Border Gateway Protocol (BGP) for configuration.

[Table 70 on page 181](#) lists the AFLs that you can purchase for EX4300 switch models. For EX4300 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX4300 switch.

Table 70: Junos OS AFL Part Number on EX4300 Switches

Switch Model	AFL Part Number
EX4300-24T EX4300-24P	EX4300-24-AFL
EX4300-48MP EX4300-48P EX4300-48T EX4300-48T-AFI EX4300-48T-DC EX4300-48T-DC-AFI	EX4300-48-AFL
EX4300-32F EX4300-32F-DC	EX4300-32F-AFL

You must download a MACsec feature license (Part Number-EX-QFX-MACSEC- ACC) to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4300 switches.

[Table 71 on page 181](#) lists the MACsec model number that you can purchase for EX4300 switch models.

Table 71: Junos OS MACsec model number on EX4300 Switches

Switch Model	Model Number
EX4300	EX-QFX-MACSEC-ACC

Features Requiring a License on EX4600 Switches

To use the following features on EX4600 switches, you must install an advanced feature license:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)
- Multiprotocol Label Switching (MPLS)
- Virtual Extensible LAN (VXLAN)

Table 72 on page 182 lists the AFLs that you can purchase for EX4600 switch models.

Table 72: Junos OS AFL Part Number on EX4600 Switches

Switch Model	AFL Part Number
EX4600-40F	EX4600-AFL

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4600 switches.

Table 73 on page 182 lists the MACsec model number that you can purchase for EX4600 switch models.

Table 73: Junos OS AFL Part Number on EX4600 Switches

Switch Model	Model Number
EX4600-40F	EX-QFX-MACSEC-AGG

Features Requiring a License on EX4650 Switches

Table 74 on page 183 lists the PFLs and AFLs that you can purchase for EX4650 switch models. If you have the license, you can run all of the premium and advanced software features mentioned below on your EX4650 switch.

Table 74: Junos OS Part Numbers on EX4650 Switches

Switch Model	License Type	Part Number
EX4650-48Y	Premium	EX4650-PFL
EX4650-48Y	Advanced	EX4650-AFL

[Table 75 on page 183](#) lists the standard Junos OS features which require licenses on EX4650 switches.

Table 75: Features which Require Licenses on EX4650 Switches

License Model	Detailed Features
Base Features	Basic IPv6, BFD, CFM (IEEE 802.1ag), Class of service (COS)/ Policing/Shaping/ Marking, Filtering, IGMPv1/v2/v3 (includes IGMP Snooping), Junos Telemetry Interface, MC-LAG, MLDv1/v2 and MSDP, OSPFv2 and OSPFv3, PIM-DM/SM/SSM and PIMv6, Q-in-Q tunneling (IEEE 802.1ad), RIPng and RPM, Timing – Boundary Clock and Timing – Transparent Clock, Unicast reverse-path forwarding (RPF), VC, Virtual Router, VRRP, and VRRPv6, Zero Touch Provisioning (ZTP)
Premium Features	Includes all base features, BGP and MBGP, Ethernet VPN, IPv6 for BGP or MGBP, IS-IS or IPv4 and IPv6, VRF, VXLAN
Advanced Features	Includes all PFL features, MPLS, MPLS based Circuit cross-connect (CCC), Resource Reservation Protocol (RSVP) label-switched path (LSP), Segment Routing, MACsec is not supported on EX4650 switch.

Features Requiring a License on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches

To use the following features on EX3200, EX4200, EX4500, EX4550, EX8200, EX9200 and EX9250 switches, you must install an advanced feature license (AFL):

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Ethernet VPN (available only on EX9200 and EX9250 switches)

- Intermediate System-to-Intermediate System (IS-IS)
- IPv6 routing protocols: IS-IS for IPv6, IPv6 BGP, IPv6 for MBGP
- Logical systems (available only on EX9200 switches)
- MPLS with RSVP-based label-switched paths (LSPs)

Starting with Junos OS Release 17.3R1, you can enable up to 200 RSVP-TE sessions in the EX9200 advanced feature license (AFL).

- MPLS-based circuit cross-connects (CCCs) (available only on EX4200 and EX4550 switches)
- Open vSwitch Database (OVSDb) (available only on EX9200 switches)
- Virtual Extensible LAN (VXLAN) (available only on EX9200 and EX9250 switches)

To use the following features on Juniper Networks EX6200 Ethernet Switches, you must install an advanced feature license (AFL):

- Border Gateway Protocol (BGP)
- Intermediate System-to-Intermediate System (IS-IS)
- IPv6 routing protocols: IS-IS for IPv6, IPv6 BGP

To use MACsec feature on Juniper Networks EX9253 Switches, you must install a security feature license (SFL).

To use Forwarding Information Base (FIB) and Address Resolution Protocol (ARP) features on Juniper Networks EX9251 and EX9253 Switches, you must install a mid-scale license (ML).

[Table 76 on page 185](#) lists the AFLs that you can purchase for EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 switches. If you have the license, you can run all of the advanced software features mentioned above on your EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, or EX9200 switch. An EFL is not applicable to this range of switches.

Table 76: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches

Switch Model	AFL Part Number
EX3200-24P	EX-24-AFL
EX3200-24T	
EX4200-24F	
EX4200-24P	
EX4200-24PX	
EX4200-24T	
EX3200-48P	EX-48-AFL
EX3200-48T	
EX4200-48F	
EX4200-48P	
EX4200-48PX	
EX4200-48T	
EX4500-40F-BF	EX-48-AFL
EX4500-40F-BF-C	
EX4500-40F-FB	
EX4500-40F-FB-C	
EX4550	EX4550-AFL
EX6210	EX6210-AFL
EX8208	EX8208-AFL
EX8216	EX8216-AFL
EX-XRE200	EX-XRE200-AFL
EX9204	EX9204-AFL

Table 76: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches (Continued)

Switch Model	AFL Part Number
EX9208	EX9208-AFL
EX9214	EX9214-AFL
EX9251	EX9251-AFL EX9251-ML
EX9253	EX9253-AFL EX9253-ML EX9253-SFL

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4200 and EX4550 switches.

Table 77 on page 186 lists the MACsec model number that you can purchase for EX4200 and EX4550 switch models.

Table 77: Junos OS MACsec model number on EX4200 and EX4550 Switches

Switch Model	Model Number
EX4550	EX-QFX-MACSEC-AGG
EX4200	EX-QFX-MACSEC-ACC

License Warning Messages

For using features that require a license, you must install and configure a license key. To obtain a license key, use the contact information provided in your certificate.

If you have not purchased the AFL or EFL and installed the license key, you receive warnings when you try to commit the configuration:

```
[edit protocols]
  'bgp'
    warning: requires 'bgp' license
error: commit failed: (statements constraint check failed)
```

The system generates system log (syslog) alarm messages notifying you that the feature requires a license—for example:

```
Sep  3 05:59:11  craftd[806]: Minor alarm set, BGP Routing Protocol usage requires a license
Sep  3 05:59:11  alarmd[805]: Alarm set: License color=YELLOW, class=CHASSIS, reason=BGP
Routing Protocol usage requires a license
Sep  3 05:59:11  alarmd[805]: LICENSE_EXPIRED: License for feature bgp(47) expired
```

Output of the `show system alarms` command displays the active alarms:

```
user@switch> show system alarms
1 alarm currently active
Alarm time           Class  Description
2009-09-03 06:00:11 UTC  Minor  BGP Routing Protocol usage requires a license
```

Licenses for EX Series

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Understanding Software Licenses for EX Series Switches

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To enable and use some of the Juniper Networks operating system (Junos OS) features, you must purchase, install, and manage separate software licenses. If the switch has the appropriate software license, you can configure and use these features.

The Junos OS feature license (that is, the purchased authorization code) is universal. However, to conform to Junos OS feature licensing requirements, you must install a unique license key (a combination of the authorization code and the switch's serial number) on each switch.

For a *Virtual Chassis* deployment, two license keys are recommended for redundancy—one for the device in the primary role and the other for the device in the backup role:

- In an EX8200 Virtual Chassis, the devices in the primary and backup roles are always XRE200 External Routing Engines.
- In all other Virtual Chassis, the devices in the primary and backup roles are switches.

You do not need additional license keys for Virtual Chassis member switches that are in the linecard role or for the redundant Routing Engine (RE) modules or the redundant Switch Fabric and Routing Engine (SRE) modules in an EX8200 member switch.

This topic describes:

Purchasing a Software Feature License

The following sections list features that require separate licenses. To purchase a software license, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). You will be asked to supply the chassis serial number of your switch; you can obtain the serial number by running the `show chassis hardware` command.

You are required to provide the 12-digit serial number when purchasing a license for an XRE200 External Routing Engine in an EX8200 Virtual Chassis.

The serial number listed on the XRE200 External Routing Engine serial ID label is 16 digits long. Use the last 12 digits of the 16-digit serial number to purchase the license.

You can use the `show chassis hardware` command output to display the 12-digit serial number of the XRE200 External Routing Engine.

License Key Components for the EX Series Switch

When you purchase a license for a Junos OS feature that requires a separate license, you receive a license key.

A license key consists of two parts:

- License ID—Alphanumeric string that uniquely identifies the license key. When a license is generated, it is given a license ID.
- License data—Block of binary data that defines and stores all license key objects.

For example, in the following typical license key, the string `Junos204558` is the license ID, and the trailing block of data is the license data:

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXX
```

The license data defines the device ID for which the license is valid and the version of the license.

Features Requiring a License on EX2200 Switches

For EX2200 switches, the following features can be added to basic Junos OS by installing an enhanced feature license (EFL):

- Bidirectional Forwarding Detection (BFD)
- Connectivity fault management (IEEE 802.1ag)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- OSPFv1/v2 (with four active interfaces)
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Q-in-Q tunneling (IEEE 802.1ad)
- Real-time performance monitoring (RPM)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 78 on page 190 lists the EFLs that you can purchase for EX2200 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX2200 switch.

Table 78: Junos OS Part Number on EX2200 Switches

Switch Model	Part Number
EX2200-C-12P-2G EX2200-C-12T-2G	EX-12-EFL
EX2200-24T-4G EX2200-24P-4G EX2200-24T-DC-4G	EX-24-EFL
EX2200-48T-4G EX2200-48P-4G	EX-48-EFL

Features Requiring a License on EX2300 Switches

EX2300 switches have enhanced feature licenses (EFLs).

To use the following features on the EX2300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3

- IPv6 routing protocols: Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3
- Multicast Source Discovery protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPF v2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Virtual Router Redundancy Protocol (VRRP)

Table 79 on page 191 lists the EFLs that you can purchase for EX2300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX2300 switch.

Table 79: Junos OS Part Number on EX2300 Switches

Switch Model	Part Number
EX2300-C-12P EX2300-C-12T	EX-12-EFL
EX2300-24T EX2300-24P EX2300-24MP	EX-24-EFL
EX2300-48T EX2300-48P EX2300-48MP	EX-48-EFL

Virtual Chassis feature support on EX2300 switches:

- The EX-12-EFL SKU includes the EX2300-VC (Virtual Chassis feature) license. EX2300-C-12P and EX2300-C-12T switches do not require an additional EX2300-VC license if you purchase the EFL license.
- EX2300-24T, EX2300-24P, EX2300-24MP, EX2300-48T, EX2300-48P, and EX2300-48MP switches do not include the EX2300-VC (Virtual Chassis feature). If you want to use Virtual Chassis feature, you must purchase a separate EX2300-VC license for each EX2300 switch.

Features Requiring a License on EX3300 Switches

Two types of licenses are available on EX3300 switches: enhanced feature licenses (EFLs) and advanced feature licenses (AFLs).

To use the following features on the EX3300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- IPv6 routing protocols: Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3, virtual router support for unicast and filter-based forwarding (FBF)
- Intermediate System-to-Intermediate System (IS-IS)
- OSPFv1/v2
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Q-in-Q tunneling (IEEE 802.1ad)
- Real-time performance monitoring (RPM)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

[Table 80 on page 192](#) lists the EFLs that you can purchase for EX3300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX3300 switch.

Table 80: Junos OS Part Number on EX3300 Switches

Switch Model	Part Number
EX3300-24T EX3300-24P EX3300-24T-DC	EX-24-EFL
EX3300-48T EX3300-48T-BF EX3300-48P	EX-48-EFL

To use the following feature on EX3300 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- IPv6 routing protocols: IPv6 BGP and IPv6 for MBGP
- Virtual routing and forwarding (VRF) BGP

Table 81 on page 193 lists the AFLs that you can purchase for EX3300 switch models. For EX3300 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX3300 switch.

Table 81: Junos OS AFL Part Number on EX3300 Switches

Switch Model	AFL Part Number
EX3300-24T EX3300-24P EX3300-24T-DC	EX-24-AFL
EX3300-48T EX3300-48T-BF EX3300-48P	EX-48-AFL

Features Requiring a License on EX3400 Switches

EX3400 switches has an enhanced feature licenses (EFLs) and MACSec license.

To use the following features on the EX3400 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3
- IPv6 routing protocols: : Multicast Listener Discovery version 1 and 2 (MLD v1/v2), OSPFv3, PIM multicast, VRRPv3, virtual router support for unicast and filter-based forwarding (FBF)
- Multicast Source Discovery Protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPF v2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)

- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 82 on page 194 lists the EFLs that you can purchase for EX3400 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX3400 switch.

Table 82: Junos OS Part Number on EX3400 Switches

Switch Model	Part Number
EX3400-24T EX3400-24P	EX-24-EFL
EX3400-48P EX3400-48T EX3400-48T-AFI EX3400-48T-DC EX3400-48T-DC-AFI	EX-48-EFL

To use the following features on the EX3400 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)

Table 83 on page 194 lists the AFLs that you can purchase for EX3400 switch models. For EX3400 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX3400 switch.

Table 83: Junos OS Part Number on EX3400 Switches

Switch Model	Part Number
EX3400-24T EX3400-24P	EX-24-AFL

Table 83: Junos OS Part Number on EX3400 Switches (Continued)

Switch Model	Part Number
EX3400-48P	EX-48-AFL
EX3400-48T	
EX3400-48T-AFI	
EX3400-48T-DC	
EX3400-48T-DC-AFI	

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX3400 switches.

Table 84 on page 195 lists the MACsec model number that you can purchase for EX3400 switch models.

Table 84: Junos OS MACsec model number on EX3400 Switches

Switch Model	Model Number
EX3400	EX-QFX-MACSEC-ACC

Features Requiring a License on EX4300 Switches

Two types of licenses are available on EX4300 switches: enhanced feature licenses (EFLs) and advanced feature licenses (AFLs).

To use the following features on the EX4300 switches, you must install an EFL:

- Bidirectional Forwarding Detection (BFD)
- Connectivity fault management (IEEE 802.1ag)
- Filter-based forwarding (FBF)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3

- Multicast Source Discovery Protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPFv2/v3
- Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 85 on page 196 lists the EFLs that you can purchase for EX4300 switch models. If you have the license, you can run all of the enhanced software features mentioned above on your EX4300 switch.

Table 85: Junos OS Part Number on EX4300 Switches

Switch Model	Part Number
EX4300-24T EX4300-24P	EX4300-24-EFL
EX4300-48MP EX4300-48P EX4300-48T EX4300-48T-AFI EX4300-48T-DC EX4300-48T-DC-AFI	EX4300-48-EFL
EX4300-32F EX4300-32F-DC	EX4300-32F-EFL

To use the following features on EX4300 switches, you must install an AFL:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)
- Ethernet VPN (EVPN) with Virtual Extensible LAN (VXLAN)

- Supported only on EX4300-48MP switch.
- Requires the Border Gateway Protocol (BGP) for configuration.

Table 86 on page 197 lists the AFLs that you can purchase for EX4300 switch models. For EX4300 switches, you must purchase and install a corresponding EFL along with the AFL to enable the advanced license features. If you have both these licenses, you can run all of the advanced software features mentioned above on your EX4300 switch.

Table 86: Junos OS AFL Part Number on EX4300 Switches

Switch Model	AFL Part Number
EX4300-24T EX4300-24P	EX4300-24-AFL
EX4300-48MP EX4300-48P EX4300-48T EX4300-48T-AFI EX4300-48T-DC EX4300-48T-DC-AFI	EX4300-48-AFL
EX4300-32F EX4300-32F-DC	EX4300-32F-AFL

You must download a MACsec feature license (Part Number-EX-QFX-MACSEC- ACC) to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4300 switches.

Table 87 on page 198 lists the MACsec model number that you can purchase for EX4300 switch models.

Table 87: Junos OS MACsec model number on EX4300 Switches

Switch Model	Model Number
EX4300	EX-QFX-MACSEC-ACC

Features Requiring a License on EX4600 Switches

To use the following features on EX4600 switches, you must install an advanced feature license:

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Intermediate System-to-Intermediate System (IS-IS)
- Multiprotocol Label Switching (MPLS)
- Virtual Extensible LAN (VXLAN)

[Table 88 on page 198](#) lists the AFLs that you can purchase for EX4600 switch models.

Table 88: Junos OS AFL Part Number on EX4600 Switches

Switch Model	AFL Part Number
EX4600-40F	EX4600-AFL

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4600 switches.

[Table 89 on page 199](#) lists the MACsec model number that you can purchase for EX4600 switch models.

Table 89: Junos OS AFL Part Number on EX4600 Switches

Switch Model	Model Number
EX4600-40F	EX-QFX-MACSEC-AGG

Features Requiring a License on EX4650 Switches

[Table 90 on page 199](#) lists the PFLs and AFLs that you can purchase for EX4650 switch models. If you have the license, you can run all of the premium and advanced software features mentioned below on your EX4650 switch.

Table 90: Junos OS Part Numbers on EX4650 Switches

Switch Model	License Type	Part Number
EX4650-48Y	Premium	EX4650-PFL
EX4650-48Y	Advanced	EX4650-AFL

[Table 91 on page 199](#) lists the standard Junos OS features which require licenses on EX4650 switches.

Table 91: Features which Require Licenses on EX4650 Switches

License Model	Detailed Features
Base Features	Basic IPv6, BFD, CFM (IEEE 802.1ag), Class of service (COS)/ Policing/Shaping/ Marking, Filtering, IGMPv1/v2/v3 (includes IGMP Snooping), Junos Telemetry Interface, MC-LAG, MLDv1/v2 and MSDP, OSPFv2 and OSPFv3, PIM-DM/SM/SSM and PIMv6, Q-in-Q tunneling (IEEE 802.1ad), RIPng and RPM, Timing – Boundary Clock and Timing – Transparent Clock, Unicast reverse-path forwarding (RPF), VC, Virtual Router, VRRP, and VRRPv6, Zero Touch Provisioning (ZTP)
Premium Features	Includes all base features, BGP and MBGP, Ethernet VPN, IPv6 for BGP or MGBP, IS-IS or IPv4 and IPv6, VRF, VXLAN

Table 91: Features which Require Licenses on EX4650 Switches (Continued)

License Model	Detailed Features
Advanced Features	Includes all PFL features, MPLS, MPLS based Circuit cross-connect (CCC), Resource Reservation Protocol (RSVP) label-switched path (LSP), Segment Routing, MACsec is not supported on EX4650 switch.

Features Requiring a License on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches

To use the following features on EX3200, EX4200, EX4500, EX4550, EX8200, EX9200 and EX9250 switches, you must install an advanced feature license (AFL):

- Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- Ethernet VPN (available only on EX9200 and EX9250 switches)
- Intermediate System-to-Intermediate System (IS-IS)
- IPv6 routing protocols: IS-IS for IPv6, IPv6 BGP, IPv6 for MBGP
- Logical systems (available only on EX9200 switches)
- MPLS with RSVP-based label-switched paths (LSPs)

Starting with Junos OS Release 17.3R1, you can enable up to 200 RSVP-TE sessions in the EX9200 advanced feature license (AFL).

- MPLS-based circuit cross-connects (CCCs) (available only on EX4200 and EX4550 switches)
- Open vSwitch Database (OVSDb) (available only on EX9200 switches)
- Virtual Extensible LAN (VXLAN) (available only on EX9200 and EX9250 switches)

To use the following features on Juniper Networks EX6200 Ethernet Switches, you must install an advanced feature license (AFL):

- Border Gateway Protocol (BGP)
- Intermediate System-to-Intermediate System (IS-IS)
- IPv6 routing protocols: IS-IS for IPv6, IPv6 BGP

To use MACsec feature on Juniper Networks EX9253 Switches, you must install a security feature license (SFL).

To use Forwarding Information Base (FIB) and Address Resolution Protocol (ARP) features on Juniper Networks EX9251 and EX9253 Switches, you must install an mid-scale license (ML).

[Table 92 on page 201](#) lists the AFLs that you can purchase for EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 switches. If you have the license, you can run all of the advanced software features mentioned above on your EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, or EX9200 switch. An EFL is not applicable to this range of switches.

Table 92: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches

Switch Model	AFL Part Number
EX3200-24P EX3200-24T EX4200-24F EX4200-24P EX4200-24PX EX4200-24T	EX-24-AFL
EX3200-48P EX3200-48T EX4200-48F EX4200-48P EX4200-48PX EX4200-48T	EX-48-AFL
EX4500-40F-BF EX4500-40F-BF-C EX4500-40F-FB EX4500-40F-FB-C	EX-48-AFL
EX4550	EX4550-AFL
EX6210	EX6210-AFL
EX8208	EX8208-AFL

Table 92: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches (Continued)

Switch Model	AFL Part Number
EX8216	EX8216-AFL
EX-XRE200	EX-XRE200-AFL
EX9204	EX9204-AFL
EX9208	EX9208-AFL
EX9214	EX9214-AFL
EX9251	EX9251-AFL EX9251-ML
EX9253	EX9253-AFL EX9253-ML EX9253-SFL

You must download a MACsec feature license to enable MACsec. The MACsec feature license is an independent feature license; the enhanced feature licenses (EFLs) or advanced feature licenses (AFLs) that must be purchased to enable some features on EX Series switches cannot be purchased to enable MACsec.

To purchase a feature license for MACsec, contact your Juniper Networks sales representative (<https://www.juniper.net/us/en/contact-us/sales-offices>). The Juniper sales representative will provide you with a feature license file and a license key.

MACsec is supported on EX4200 and EX4550 switches.

Table 93 on page 203 lists the MACsec model number that you can purchase for EX4200 and EX4550 switch models.

Table 93: Junos OS MACsec model number on EX4200 and EX4550 Switches

Switch Model	Model Number
EX4550	EX-QFX-MACSEC-AGG
EX4200	EX-QFX-MACSEC-ACC

License Warning Messages

For using features that require a license, you must install and configure a license key. To obtain a license key, use the contact information provided in your certificate.

If you have not purchased the AFL or EFL and installed the license key, you receive warnings when you try to commit the configuration:

```
[edit protocols]
  'bgp'
    warning: requires 'bgp' license
error: commit failed: (statements constraint check failed)
```

The system generates system log (syslog) alarm messages notifying you that the feature requires a license—for example:

```
Sep  3 05:59:11  craftd[806]: Minor alarm set, BGP Routing Protocol usage requires a license
Sep  3 05:59:11  alarmd[805]: Alarm set: License color=YELLOW, class=CHASSIS, reason=BGP
Routing Protocol usage requires a license
Sep  3 05:59:11  alarmd[805]: LICENSE_EXPIRED: License for feature bgp(47) expired
```

Output of the `show system alarms` command displays the active alarms:

```
user@switch> show system alarms
1 alarm currently active
Alarm time          Class  Description
2009-09-03 06:00:11 UTC  Minor  BGP Routing Protocol usage requires a license
```

Software Features That Require Licenses on EX Series Switches

The following Junos OS features require an Enhanced Feature License (EFL) or Advanced Feature License (AFL) on EX Series devices:

- (EX2200 only) Bidirectional forwarding detection (BFD)
- (EX2200 only) Connectivity fault management (IEEE 802.lag)
- (EX2200 only) Internet Group Management Protocol version 1 (IGMPv1), IGMPv2, and IGMPv3
- (EX2200 and EX3300) OSPFv1/v2 (with 4 active interfaces)
- (EX2200 only) Protocol Independent Multicast (PIM) dense mode, PIM source-specific mode, PIM sparse mode
- (EX2200 and EX3300) Q-in-Q tunneling (IEEE 802.lad)
- (EX2200 only) Real-time performance monitoring (RPM)
- (EX3200, EX4200, EX4500, EX6200, and EX8200) Border Gateway Protocol (BGP) and multiprotocol BGP (MBGP)
- (EX3200, EX4200, EX4500, EX6200, and EX8200) Intermediate System-to-Intermediate System (IS-IS)
- (EX3200, EX4200, EX4500, EX6200, and EX8200) IPv6 protocols: OSPFv3, PIPng, IS-IS for IPv6, IPv6 BGP
- (EX3200, EX4200, EX4500, EX6200, and EX8200) MPLS with RSVP-based label-switched paths (LSPs) and MPLS-based circuit cross-connects (CCCs)

For more details regarding EX Series feature licenses, see *Understanding Software Licenses for EX Series Switches*.

For information about how to purchase a software license, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

License Key Components for the EX Series Switch

When you purchase a license for a Junos OS feature that requires a separate license, you receive a license key.

A license key consists of two parts:

- License ID—Alphanumeric string that uniquely identifies the license key. When a license is generated, it is given a license ID.
- License data—Block of binary data that defines and stores all license key objects.

For example, in the following typical license key, the string Junos204558 is the license ID, and the trailing block of data is the license data:

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXX XXX
```

The license data defines the device ID for which the license is valid and the version of the license.

Managing Licenses for EX Series Switches (CLI Procedure)

IN THIS SECTION

- [Adding New Licenses | 205](#)
- [Deleting Licenses | 206](#)
- [Saving License Keys | 206](#)

To enable and use some Junos OS features on an EX Series switch, you must purchase, install, and manage separate software licenses. Each switch requires one license. For a Virtual Chassis deployment, two licenses are recommended for redundancy. After you have configured the features, you see a warning message if the switch does not have a license for the feature.

Before you begin managing licenses, be sure that you have:

- Obtained the needed licenses. For information about how to purchase software licenses, contact your Juniper Networks sales representative.
- Understand what makes up a license key. For more information, see *License Key Components for the EX Series Switch*.

This topic includes the following tasks:

Adding New Licenses

To add one or more new license keys on the switch, with the CLI:

1. Add the license key or keys:

- To add one or more license keys from a file or URL, specify the filename of the file or the URL where the key is located:

```
user@switch> request system license add filename / url
```


- To add a license key from the terminal:

```
user@switch> request system license add terminal
```

2. When prompted, enter the license key, separating multiple license keys with a blank line.

If the license key you enter is invalid, an error appears in the CLI output when you press Ctrl+d to exit the license entry mode.

Deleting Licenses

To delete one or more license keys from the switch with the CLI, specify the license ID:

```
user@switch> request system license delete license-id
```

You can delete only one license at a time.

Saving License Keys

To save the installed license keys to a file (which can be a URL) or to the terminal:

```
user@switch> request system license save filename / url
```

For example, the following command saves the installed license keys to a file named `license.conf`:

```
user@switch> request system license save ftp://user@switch/license.conf
```

Monitoring Licenses for the EX Series Switches

IN THIS SECTION

- [Displaying Installed Licenses and License Usage Details | 207](#)
- [Displaying Installed License Keys | 208](#)

Displaying Installed Licenses and License Usage Details

IN THIS SECTION

- Purpose | 207
- Action | 207
- Meaning | 208

Purpose

Verify that the expected license is installed and active on the switch and fully covers the switch configuration.

Action

From the CLI, enter the `show system license` command. (To display only the License usage list, enter the `show system license usage` command. To display only the Licenses installed output, enter `show system license installed`.)

```
user@switch> show system license
License usage:
```

	Licenses	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
bgp	1	1	0	permanent
isis	0	1	0	permanent
ospf3	0	1	0	permanent
ripng	0	1	0	permanent
mpls	0	1	0	permanent

Licenses installed:

License identifier: XXXXXXXXXX

License version: 2

Valid for device: XXXXXXXXXX

Features:

ex-series - Licensed routing protocols in ex-series

permanent

Meaning

The output shows the license or licenses (for Virtual Chassis deployments) installed on the switch and license usage. Verify the following information:

- If a feature that requires a license is configured (used), a license is installed on the switch. The Licenses needed column must show that no licenses are required.
- The appropriate number of licenses is installed. Each switch requires one license. For a Virtual Chassis deployment, two licenses are recommended for redundancy.
- The expected license is installed.

Displaying Installed License Keys

IN THIS SECTION

- Purpose | 208
- Action | 209
- Meaning | 209

Purpose

Verify that the expected license keys are installed on the switch.

Action

From the CLI, enter the `show system license keys` command.

```
user@switch> show system license keys
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXX
```

Meaning

The output shows the license key or keys (for Virtual Chassis deployments) installed on the switch. Verify that each expected license key is present.

Licenses for QFX Series

IN THIS SECTION

- [Software Features That Require Licenses on the QFX Series | 209](#)
- [Generating License Keys | 218](#)
- [Generating the License Keys for a QFabric System | 219](#)
- [Understanding Junos Fusion Licenses | 221](#)

Software Features That Require Licenses on the QFX Series

The standard Junos OS software shipped on the hardware platform for QFX Series switches except the QFX5200-32C, includes a perpetual base license. This license is valid for the life of the hardware platform.

You must purchase the perpetual base license on the disaggregated Junos OS feature licenses on the QFX5200-32C, see [Licenses for QFX5200-32C Switch](#).

For information regarding newer subscription based licenses, including platforms supported, see [Flex Software License for QFX Series Switches](#).

For information about how to purchase any software license, contact your Juniper Networks sales representative, or an approved [Juniper Partner](#).

[Table 94 on page 210](#) lists the Junos OS features which require licenses on QFX5100, QFX5110-48S-AFI/AFO (DC), QFX5110-32Q-AFI/AFO (DC), QFX5120-48Y-AFI/AFO (DC), QFX5210-64C and QFX10000 line of switches.

Table 94: Software Features which Require Licenses on QFX5100, QFX5110-48S-AFI/AFO (DC), QFX5110-32Q-AFI/AFO (DC), QFX5120-48Y-AFI/AFO (DC), QFX5210-64C and QFX10000 line of switches.

Base Features	Premium Features	Advanced Features
Basic IPv6	BGP	MPLS
BFD	Ethernet VPN	MPLS-based CCC
CFM (IEEE 802.1ag)	IPv6 for BGP/MBGP	RSVP-based LSP
Class of service (COS)/Policing/Shaping/Marking	IS-IS	Segment Routing
Filtering	IS-IS for IPv6	
IGMPv1/v2/v3 (includes IGMP Snooping)	MBGP	
Junos Telemetry Interface	OVSDB	
MC-LAG	VRF(BGP)	
MLDv1/v2	VXLAN	
OSPFv2		
OSPFv3		
PIM-DM/SM/SSM		

Table 94: Software Features which Require Licenses on QFX5100, QFX5110-48S-AFI/AFO (DC), QFX5110-32Q-AFI/AFO (DC), QFX5120-48Y-AFI/AFO (DC), QFX5210-64C and QFX10000 line of switches. (Continued)

Base Features	Premium Features	Advanced Features
PIMv6		
Q-in-Q tunneling (IEEE 802.1ad)		
RIPng		
RPM		
PTP – Boundary Clock		
PTP – Transparent Clock		
Unicast reverse-path forwarding(RPF)		
Virtual Chassis (VC) Applicable also for QFX5200-48Y switches.		
Virtual Router		
VRRP		
VRRPv6		
Zero Touch Provisioning (ZTP)		

Table 95 on page 212 lists the Junos OS features which require licenses on QFX5120, QFX5200-48Y, QFX5210, and QFX5200-32C-L switches.

Table 95: Software Features which Require Licenses on QFX5120, QFX5200-48Y, QFX5210, and QFX5200-32C-L switches.

Base Features	Premium Features	Advanced Features
Basic IPv6	BGP	MPLS
BFD	Ethernet VPN	MPLS-based CCC
CFM (IEEE 802.1ag)	IPv6 for BGP/MBGP	RSVP-based LSP
Class of service (COS)/Policing/Shaping/ Marking	IS-IS	Segment Routing
Filtering	IS-IS for IPv6	
IGMPv1/v2/v3 (includes IGMP Snooping)	MBGP	
Junos Telemetry Interface	OVSDB	
	MC-LAG	
MLDv1/v2	VXLAN	
OSPFv2	Virtual Chassis (VC) Except for QFX5200-48Y switches.	
OSPFv3		
PIM-DM/SM/SSM		
PIMv6		

Table 95: Software Features which Require Licenses on QFX5120, QFX5200-48Y, QFX5210, and QFX5200-32C-L switches. (Continued)

Base Features	Premium Features	Advanced Features
Q-in-Q tunneling (IEEE 802.1ad)		
RIPng		
RPM		
PTP – Boundary Clock		
PTP – Transparent Clock		
Unicast reverse-path forwarding(RPF)		
Virtual Router		
VRRP		
VRRPv6		
Zero Touch Provisioning (ZTP)		

- If you try to configure a feature that is not licensed, you will receive syslog messages saying that you are using a feature that is licensable and that you do not possess a license for the feature. If you try to commit configuration changes for a feature that is not licensed, you will receive a commit warning saying that you have exceeded the allowed license limit for the feature. The feature will commit and be usable but this action violates EULA agreement.
- On QFX5100 and QFX5110, there is no separate license for Virtual Chassis like there is for Virtual Chassis Fabric.

- Premium Feature Licenses (PFL) include the Base License Features. Advanced Feature Licenses (AFL) include the Base and Premium License Features.

Table 96 on page 214 describes the licenses required for QFX series switches:

Table 96: Licenses Required for QFX Series Switches

License	Description	Number of Licenses Required	QFX Devices Supported
Base	Features included with the switch - No License required	-	-
QFX-JSL-EDGE-ADV1	QFX Series Edge Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX3500, QFX3600, QFX5100-48S, QFX5100-48T
QFX5100-HDNSE-LIC	QFX5100-24Q and QFX5100-96S Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5100-24Q , QFX5100-96S
QFX5K-C1-PFL	QFX5000 Class 1 Premium Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5110-32Q, QFX5110-48S, QFX5120-48Y, QFX5200-48Y
QFX5K-C1-AFL	QFX5000 Class 1 Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5110-32Q, QFX5110-48S, QFX5120-48Y, QFX5200-48Y

Table 96: Licenses Required for QFX Series Switches (*Continued*)

License	Description	Number of Licenses Required	QFX Devices Supported
QFX5K-C2-PFL	QFX5000 Class 2 Premium Feature License	One per switch	QFX5210-64C
QFX5K-C2-AFL	QFX5000 Class 2 Advanced Feature License	One per switch	QFX5210-64C
QFX10002-36Q-PFL	QFX10002-36Q Premium Feature License	One per switch	QFX10002-36Q
QFX10002-36Q-AFL	QFX10002-36Q Advanced Feature License	One per switch	QFX10002-36Q
QFX10002-60C-PFL	QFX10002-60C Premium Feature License	One per switch	QFX10002-60C
QFX10002-60C-AFL	QFX10002-60C Advanced Feature License	One per switch	QFX10002-60C
QFX10002-72Q-PFL	QFX10002-72Q Premium Feature License	One per switch	QFX10002-72Q
QFX10002-72Q-AFL	QFX10002-72Q Advanced Feature License	One per switch	QFX10002-72Q
QFX10008-PFL	QFX10008 Premium Feature License	One per switch	QFX10008
QFX10008-AFL	QFX10008 Advanced Feature License	One per switch	QFX10008

Table 96: Licenses Required for QFX Series Switches (*Continued*)

License	Description	Number of Licenses Required	QFX Devices Supported
QFX10016-PFL	QFX10016 Premium Feature License	One per switch	QFX10016
QFX10016-AFL	QFX10016 Advanced Feature License	One per switch	QFX10016
QFX-JSL-DRCTR-ADV1	QFX Series Control Advanced feature license 1	One per Node device in a network Node group	QFX3100 Director device
QFX-JSL-EDGE-FC	QFX Series Edge feature license for Fibre Channel	One per switch on which fibre channel ports are configured	QFX3500
QFX-JSL-DRCTR-FC	QFX Series Control Feature License for Fibre Channel	One per QFX3500 Node device on which fibre channel ports are configured	QFX3100 Director device
QFX-JSL-DRCTR-FC-C16	QFX Series Control Feature License for Fibre Channel Capacity 16	One for up to 16 QFX3500 Node devices on which fibre channel ports are configured	QFX3100 Director device
QFX3000-JSL-EDGE-FAB	QFX3000 Series QFabric / Node Feature License	One per device	QFX3100 Director device
QFX3008-JSL-DRCTR-FAB	QFX3000-G Base Fabric Software	One per QFX3000-G QFabric system	QFX3000-G

Table 96: Licenses Required for QFX Series Switches (*Continued*)

License	Description	Number of Licenses Required	QFX Devices Supported
QFX3000M-JSL-DRCTR-FAB	QFX3000-M Base Fabric Software	One per QFX3000-M QFabric system	QFX3000-M
EX-QFX-MACSEC-AGG	QFX and EX Series feature license for enabling Media Access Control security (MACsec). See <i>Understanding Media Access Control Security (MACsec)</i>	One per switch, two per Virtual Chassis	QFX switches that support MACsec
QFX-VCF-LIC	Virtual Chassis Fabric (VCF) License for QFX5100 and QFX5110.	Two per Virtual Chassis Fabric (VCF)	QFX5100 and QFX5110.
QFX10000-30C-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per line card	QFX10000-30C, QFX10000-30C-M line cards
QFX10000-36Q-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per line card	QFX10000-36Q, QFX10K-12C-DWDM line cards
QFX10000-60S-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per line card	QFX10000-60S-6Q line card
QFX10002-36Q-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per switch	QFX10002 36-port 40GbE QSFP+/12-port 100GbE QSFP28 switch

Table 96: Licenses Required for QFX Series Switches (Continued)

License	Description	Number of Licenses Required	QFX Devices Supported
QFX10002-60C-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per switch	QFX10002-60C
QFX10002-72Q-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per switch	QFX10002-72Q

Generating License Keys

Before generating the license keys for a device:

- Purchase the required licenses for the device. See *Software Features That Require Licenses on the QFX Series* and [Licenses for QFX5200-32C Switch](#).
- Note down the authorization code in the e-mail you received from Juniper Networks when you purchased the license. Determine the serial number of the device. For instructions, see [Download and Activate Your Software](#)

When you purchase a Junos OS software feature license for a device, you receive an e-mail containing an authorization code for the feature license from Juniper Networks. You can use the authorization code to generate a unique license key (a combination of the authorization code and the device's serial number) for the device, and then add the license key on the device.

To generate the license keys for a device:

This procedure shows you how to generate license keys on a QFX Series device, but you can follow the same procedure for any device.

1. In a browser, log in to the Juniper Networks License Management System at <https://www.juniper.net/lcrs/license.do>.

The Manage Product Licenses page appears.

To access the licensing site, you must have a service contract with Juniper Networks and an access account. If you need help obtaining an account, complete the registration form at the Juniper Networks website

<https://www.juniper.net/registration/Register.jsp>.

2. On the Generate Licenses tab, select **QFX Series Product** from the drop-down list, and click **Go**.

The Generate Licenses - QFX Series Product page appears.

3. In the **Device Serial Number** field, enter the serial number for the device.
4. In the **Authorization Code** field, enter the authorization code in the e-mail you received from Juniper Networks when you purchased the license.
5. (Optional) If you want to enter another authorization code for the same device, click **Enter More Authorization Codes** to display a new authorization code field. Enter the authorization code in this field.
6. Click **Confirm**.

The Confirm License Information page appears, displaying a summary of the information you submitted to the License Management System.

7. Review the information to ensure everything is correct and then click **Generate License**.

The Generate Licenses - QFX Series Product Devices page appears, displaying a summary of your license keys, including a link that displays the details of your new license keys.

8. Select the file format in which you want to obtain your new license keys.
9. Select the delivery method you want to use to obtain your new license keys.

To download the license keys:

- Select the **Download to this computer** option button, and click **OK**.

To e-mail the license keys:

- Select the **Send e-mail to *e-mail ID*** option button, and click **OK**.

SEE ALSO

Software Features That Require Licenses on the QFX Series

Generating the License Keys for a QFabric System

Before generating the license keys for a QFabric system:

- Purchase the required licenses for the QFabric system. See *Software Features That Require Licenses on the QFX Series*.
- Note down the authorization code in the e-mail you received from Juniper Networks when you purchased the license.
- Perform the initial setup of the QFabric system on the Director group. See *Performing the QFabric System Initial Setup on a QFX3100 Director Group*.

- Log in to the QFabric system, issue the `show version` command, and note down the software serial number and QFabric system ID for the QFabric system.

```
user@qfabric> show version
Hostname: qfabric
Model: qfx3000-g
Serial Number: qfsn-0123456789
QFabric System ID: f158527a-f99e-11e0-9fbd-00e081c57cda
JUNOS Base Version [12.2I20111018_0215_dc-builder]
```

When you purchase a Junos OS software feature license for a QFabric system, you receive an e-mail containing an authorization code for the feature license from Juniper Networks. You can use the authorization code to generate a unique license key (a combination of the authorization code and the QFabric system ID) for the QFabric system, and then add the license key on the QFabric system.

To generate the license keys for a QFabric system:

1. In a browser, log in to the license portal.

The products supported by the [Juniper Agile Licensing](#) (JAL) portal includes: QFX series, SRX Series, EX Series, NFX, vBNG, vMX, vSRX, and ACX. For other Juniper products (SPACE, JSA, SBR Carrier, Screen OS and so on) access the [License Management System](#) (LMS).

The Manage Product Licenses page appears.

To access the licensing site, you must have a service contract with Juniper Networks and an access account. If you need help obtaining an account, complete the registration form at the Juniper Networks website

<https://www.juniper.net/registration/Register.jsp> .

2. On the Generate Licenses tab, select **QFX Series Product** from the drop-down list, and click **Go**.

The Generate Licenses - QFX Series Product page appears.

3. Select the **QFX Series Product Fabric** option button, and then click **Continue**.

The Generate Licenses - QFX Series Product Fabrics page appears.

4. In the **Software Serial No** field, enter the software serial number for the QFabric system.
5. In the **QFabric System ID** field, enter the QFabric system ID for the QFabric system.
6. In the **Authorization Code** field, enter the authorization code in the e-mail you received from Juniper Networks when you purchased the license.
7. (Optional) If you want to enter another authorization code for the same device, click **Enter More Authorization Codes** to display a new authorization code field. Enter the authorization code in this field.
8. Click **Confirm**.

The Confirm License Information page appears, displaying a summary of the information you submitted to the license portal.

9. Review the information to ensure everything is correct and then click **Generate License**.

The Generate Licenses - QFX Series Product Fabrics page appears, displaying a summary of your license keys, including a link that displays the details of your new license keys.

10. Select the file format in which you want to obtain your new license keys.

11. Select the delivery method you want to use to obtain your new license keys.

To download the license keys:

- Select the **Download to this computer** option button, and click **OK**.

To e-mail the license keys:

- Select the **Send e-mail to e-mail ID** option button, and click **OK**.

SEE ALSO

Performing the QFabric System Initial Setup on a QFX3100 Director Group

show version

Understanding Junos Fusion Licenses

New deployments for Multichassis link aggregation groups (MC-LAG) or Ethernet VPN (EVPN) based Junos Fusion Data Center are not recommended.

Starting with Junos OS Release 17.2R1, you need to install a Junos Fusion license in addition to any other feature licenses that you install to track and activate certain QFX5100-48SH and QFX5100-48TH models that are shipped with satellite software. These models can only be used as satellite devices. For these models, you need to install a Junos Fusion license in addition to any other feature licenses that you install. See [Table 97 on page 222](#) for a list of satellite devices that require Junos Fusion licenses.

You do not need Junos Fusion licenses for satellite device models that were purchased as Junos OS-based top-of-rack switches.

Install the Junos Fusion licenses on the aggregation device because the aggregation device is the single point of management in a Junos Fusion. If your Junos Fusion is operating in a topology with multiple aggregation devices, you only need to install the licenses on one aggregation device because the license keys are synchronized between the two aggregation devices.

You can install a single-pack license to activate one satellite device, or you can install multi-pack licenses, which can activate up to 128 satellite devices. If the number of satellite devices in a Junos Fusion exceeds the number of Junos Fusion licenses you have installed, the satellite devices are provisioned, but the system will issue a warning saying that there is a license limit violation. If the

satellite device does not have a corresponding Junos Fusion license installed, the satellite device is provisioned, but the system will issue a warning.

Table 97 on page 222 lists the supported aggregation and satellite devices as well as the model numbers of the Junos Fusion license packs.

For information about how to purchase a software license, contact your Juniper Networks sales representative. For information on standard Junos OS feature licenses, see *Software Features That Require Licenses on the QFX Series*.

Table 97: Junos Fusion License Model Numbers for Satellite Devices

Aggregation Devices Supported	Satellite Devices Requiring Licenses	Model Numbers of License Packs
QFX10002, QFX10008 and QFX10016 switches	• QFX5100-48SH-AFO	QFX10K-C1-JFS-1
	• QFX5100-48SH-AFI	QFX10K-C1-JFS-4
	• QFX5100-48TH-AFO	QFX10K-C1-JFS-8
	• QFX5100-48TH-AFI	QFX10K-C1-JFS-16
		QFX10K-C1-JFS-32
		QFX10K-C1-JFS-64

SEE ALSO

Generating License Keys

Licenses for QFX5200-32C Switch

IN THIS SECTION

- Disaggregated Software Features That Require Licenses on the QFX Series | 223
- Software Features That Require Licenses on the QFX5200-32C Switch | 224

Disaggregated Software Features That Require Licenses on the QFX Series

IN THIS SECTION

- [Disaggregated Software Feature Licenses on QFX5200 Switches | 223](#)

Disaggregated Software Feature Licenses on QFX5200 Switches

The disaggregated software feature licenses are only applicable for QFX5200-32C devices. For QFX5200-48Y devices, the base software features are included with the device. Additional licenses are required only for premium and advanced features.

The Junos OS software is disaggregated from the hardware. With disaggregated Junos OS, you can purchase the following feature licenses, which are available on a perpetual basis:

- Junos Base Software (JBS) license:

Includes basic layer 2 switching, basic layer 3 routing, multicast, automation, programmability, Zero Touch Provisioning (ZTP) and basic monitoring.

You must purchase the JBS license to use basic functions, but you do not need to install the license key in Junos OS Release 15.1X53-D30. JBS basic functions work with this release without installing the license key. However, you will need to install the license key in a future release of Junos OS to be determined, so make sure to retain the authorization code you received from the license portal to generate a license key for the JBS license. If the license is not installed, system triggers the log messages.

The products supported by the [Juniper Agile Licensing](#) (JAL) portal includes: QFX series, SRX Series, EX Series, NFX, vBNG, vMX, vSRX, and ACX. For other Juniper products (SPACE, JSA, SBR Carrier, Screen OS and so on) access the [License Management System](#) (LMS).

- Junos Advanced Software (JAS) license:

Includes features supported in JBS license and Border Gateway Protocol (BGP), Intermediate System-to-Intermediate System (IS-IS), and Virtual Extensible Local Area Network (VXLAN). You need to install the license key to use these features.

- Junos Premium Software (JPS) license:

Includes features supported in JAS license and Multi-protocol Label Switching (MPLS) feature set. You need to install the license key to use these features.

For information about how to purchase a software feature license, contact your Juniper Networks sales representative.

Table 98: Disaggregated Junos OS Feature Licenses and Associated SKU's

Licence SKU	Description	Number of Licenses Required	QFX Devices Supported
QFX5000-3 5-JBS	Junos base software (JBS) license	One per switch	QFX5200-32C
QFX5000-3 5-JAS	Junos advanced software (JAS) license	One per switch	QFX5200-32C
QFX5000-3 5-JPS	Junos premium software (JPS) license	One per switch	QFX5200-32C

Software Features That Require Licenses on the QFX5200-32C Switch

The standard Junos OS software shipped on the hardware platform for QFX5200-32C switch does not include a perpetual base license.

You must purchase the perpetual base license on the disaggregated Junos OS feature licenses on the QFX5200-32C. This license is valid for the life of the hardware platform.

For information about how to purchase any software license, contact your Juniper Networks sales representative, or an approved [Juniper Partner](#).

[Table 99 on page 224](#) lists the Junos OS features which require licenses on QFX5200-32C switch.

Table 99: Software Features which Require Licenses on QFX5200-32C switch.

Junos base software (JBS) license	Junos advanced software (JAS) license	Junos premium software (JPS) license
Basic IPv6	BGP	MPLS
BFD	Ethernet VPN	MPLS-based CCC

Table 99: Software Features which Require Licenses on QFX5200-32C switch. (Continued)

Junos base software (JBS) license	Junos advanced software (JAS) license	Junos premium software (JPS) license
CFM (IEEE 802.1ag)	IPv6 for BGP/MBGP	RSVP-based LSP
Class of service (COS)/Policing/Shaping/Marking	IS-IS	Segment Routing
Filtering	IS-IS for IPv6	
IGMPv1/v2/v3 (includes IGMP Snooping)	MBGP	
Junos Telemetry Interface	OVSDB	
MC-LAG	VRF(BGP)	
MLDv1/v2	VXLAN	
OSPFv2		
OSPFv3		
PIM-DM/SM/SSM		
PIMv6		
Q-in-Q tunneling (IEEE 802.1ad)		
RIPng		
RPM		

Table 99: Software Features which Require Licenses on QFX5200-32C switch. (Continued)

Junos base software (JBS) license	Junos advanced software (JAS) license	Junos premium software (JPS) license
PTP – Boundary Clock		
PTP – Transparent Clock		
Unicast reverse-path forwarding(RPF)		
Virtual Chassis (VC)		
Virtual Router		
VRRP		
VRRPv6		
Zero Touch Provisioning (ZTP)		

If you try to configure a feature that is not licensed, you will receive syslog messages saying that you are using a feature that is licensable and that you do not possess a license for the feature. If you try to commit configuration changes for a feature that is not licensed, you will receive a commit warning saying that you have exceeded the allowed license limit for the feature. The feature will commit and be usable but this action violates EULA agreement.

Premium Feature Licenses (PFL) include the Base License Features. Advanced Feature Licenses (AFL) include the Base and Premium License Features.

[Table 100 on page 227](#) describes SKUs for QFX5200-32C switch.

Table 100: QFX5200-32C switch SKUs

Licensed Software Features	SKU's
Junos base software (JBS) license	QFX5000-35-JBS
Junos advanced software (JAS) license	QFX5000-35-JAS
Junos premium software (JPS) license	QFX5000-35-JPS

Licenses for Security Devices

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- Licenses for SRX Series | 234
- Managing Junos OS Licenses | 281
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Licenses for Juniper Secure Connect

Juniper Secure Connect is Juniper's client-based SSL-VPN solution. It provides secure connectivity to your protected resources and protects the client from security threats in the network. For more information on how to install and configure, see [Juniper Secure Connect Administrator Guide](#).

You can avail 1 year, 3 year, or 5 year subscription licenses for Juniper Secure Connect. SRX Series devices and vSRX include two built-in concurrent user licenses.

You need new license keys to activate additional concurrent user than the two built-in concurrent user licenses on SRX Series devices and vSRX. Contact your Juniper Account Team or Juniper Partner for purchasing additional license.

[Table 101 on page 229](#) shows definition of Juniper Secure Connect remote access VPN license SKUs.

Table 101: Juniper Secure Connect Remote Access VPN License SKUs Definition

License SKU	SKU Character Description
S-RA3-SRX3XX-S-1/3/5	<p>S—Subscription</p> <p>RA3—Juniper Secure Connect</p> <p>SRX3XX—SRX300 line of devices (only supported on SRX300 line of devices)</p> <p>S—Standard software subscription</p> <p>1/3/5—Subscription term 1 or 3 or 5 years</p>
S-RA3-XCCU-S-1/3/5	<p>S—Subscription</p> <p>RA3—Juniper Secure Connect</p> <p>XCCU—X is the number of total connected concurrent users (supported on SRX Series devices and vSRX)</p> <p>S—Standard software subscription</p> <p>1/3/5—Subscription term 1 or 3 or s years</p>

[Table 102 on page 230](#) describes remote access VPN license SKUs for Juniper Secure Connect on SRX Series devices and vSRX.

Table 102: Remote Access VPN License SKUs for Juniper Secure Connect

Supported Devices	License SKUs	Description
SRX300	S-RA3-SRX300-S-1 S-RA3-SRX300-S-3 S-RA3-SRX300-S-5	25 Concurrent users with software support
SRX320	S-RA3-SRX320-S-1 S-RA3-SRX320-S-3 S-RA3-SRX320-S-5	50 Concurrent users with software support
SRX340	S-RA3-SRX340-S-1 S-RA3-SRX340-S-3 S-RA3-SRX340-S-5	150 Concurrent users with software support

Table 102: Remote Access VPN License SKUs for Juniper Secure Connect *(Continued)*

Supported Devices	License SKUs	Description
SRX345	S-RA3-SRX345-S-1 S-RA3-SRX345-S-3 S-RA3-SRX345-S-5	250 Concurrent users with software support
SRX380	S-RA3-SRX380-S-1 S-RA3-SRX380-S-3 S-RA3-SRX380-S-5	500 Concurrent users with software support
SRX300, SRX320, SRX340, SRX345, SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-5CCU-S-1 S-RA3-5CCU-S-3 S-RA3-5CCU-S-5	5 Concurrent users with software support

Table 102: Remote Access VPN License SKUs for Juniper Secure Connect *(Continued)*

Supported Devices	License SKUs	Description
SRX300, SRX320, SRX340, SRX345, SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-25CC U-S-1 S-RA3-25CC U-S-3 S-RA3-25CC U-S-5	25 Concurrent users with software support
SRX320, SRX340, SRX345, SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-50CC U-S-1 S-RA3-50CC U-S-3 S-RA3-50CC U-S-5	50 Concurrent users with software support
SRX340, SRX345, SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-100C CU-S-1 S-RA3-100C CU-S-3 S-RA3-100C CU-S-5	100 Concurrent users with software support

Table 102: Remote Access VPN License SKUs for Juniper Secure Connect *(Continued)*

Supported Devices	License SKUs	Description
SRX345, SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-250C CU-S-1 S-RA3-250C CU-S-3 S-RA3-250C CU-S-5	250 Concurrent users with software support
SRX380, SRX550HM, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, SRX5800, and vSRX	S-RA3-500C CU-S-1 S-RA3-500C CU-S-3 S-RA3-500C CU-S-5	500 Concurrent users with software support
SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, and SRX5800	S-RA3-1KCC U-S-1 S-RA3-1KCC U-S-3 S-RA3-1KCC U-S-5	1000 Concurrent users with software support

Table 102: Remote Access VPN License SKUs for Juniper Secure Connect (Continued)

Supported Devices	License SKUs	Description
SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, and SRX5800	S-RA3-5KCC U-S-1 S-RA3-5KCC U-S-3 S-RA3-5KCC U-S-5	5000 Concurrent users with software support

Licenses for SRX Series

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- [Understanding Chassis Cluster Licensing Requirements | 268](#)
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Software Feature Licenses for SRX Series Devices

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Each feature license is tied to exactly one software feature, and that license is valid for exactly one device. Each license allows you to run the specified advanced software features on a single device. Platform support depends on the Junos OS release in your installation.

NOTE: To understand more about Junos OS Software Licensing, see the [Juniper Licensing Guide](#). Please refer to the product [Data Sheets](#) accessible from [Products & Services](#) for details, or contact your Juniper Account Team or Juniper Partner.

Sky Advanced Threat Prevention, ThreatFeed and Enhanced Web Filtering individual license are available. This is not a complete list of licenses. For the most up-to-date license models available, contact your Juniper Networks representative for license information.

Features Requiring a License on SRX100 and SRX110 Devices

Table 103 on page 236 lists the licenses you can purchase for each SRX Series software feature.

Table 103: SRX100 and SRX110 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signatures (1 year and 3 years subscription)	SRX100	SRX100-APPSEC-A-1
	SRX110	SRX100-APPSEC-A-3
		SRX1XX-APPSEC-A-1
		SRX1XX-APPSEC-A-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX100	SRX1XX-IDP
	SRX110	SRX1XX-IDP-3
Kaspersky antivirus (1 year and 3 years subscription)	SRX100	SRX1XX-K-AV
	SRX110	SRX1XX-K-AV-3
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX100	SRX1XX-SMB4-CS
	SRX110	SRX1XX-SMB4-CS-3
Sophos antispam (1 year and 3 years subscription)	SRX100	SRX1XX-S2-AS
	SRX110	SRX1XX-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX100	SRX1XX-S-AV
	SRX110	SRX1XX-S-AV-3

Table 103: SRX100 and SRX110 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX100	SRX1XX-S-SMB4-CS
	SRX110	SRX1XX-S-SMB4-CS-3
Websense Enhanced Web Filtering (1 year and 3 years subscription)	SRX100	SRX1XX-W-EWF
	SRX110	SRX1XX-W-EWF-3

Features Requiring a License on SRX210 Devices

[Table 104 on page 237](#) lists the licenses you can purchase for each SRX Series software feature.

Table 104: SRX210 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signatures (1 year and 3 years subscription)	SRX210	SRX210-APPSEC-A-1
		SRX210-APPSEC-A-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX210	SRX210-IDP
		SRX210-IDP-3
Kaspersky antivirus (1 year and 3 years subscription)	SRX210	SRX210-K-AV
		SRX210-K-AV-3
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX210	SRX210-SMB4-CS
		SRX210-SMB4-CS-3

Table 104: SRX210 Junos OS Feature License Model Number *(Continued)*

Licensed Software Feature	Supported Devices	Model Number
Sophos antispam (1 year and 3 years subscription)	SRX210	SRX210-S2-AS SRX210-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX210	SRX210-S-AV SRX210-S-AV-3
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX210	SRX210-S-SMB4-CS SRX210-S-SMB4-CS-3
Websense Enhanced Web Filtering (1 year and 3 years subscription)	SRX210	SRX210-W-EWF SRX210-W-EWF-3

Features Requiring a License on SRX220 Devices

[Table 105 on page 238](#) lists the licenses you can purchase for each SRX Series software feature.

Table 105: SRX220 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signatures (1 year and 3 years subscription)	SRX220	SRX220-APPSEC-A-1 SRX220-APPSEC-A-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX220	SRX220-IDP SRX220-IDP-3

Table 105: SRX220 Junos OS Feature License Model Number *(Continued)*

Licensed Software Feature	Supported Devices	Model Number
Kaspersky antivirus (1 year and 3 years subscription)	SRX220	SRX220-K-AV SRX220-K-AV-3
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX220	SRX220-SMB4-CS SRX220-SMB4-CS-3
Sophos antispam (1 year and 3 years subscription)	SRX220	SRX220-S2-AS SRX220-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX220	SRX220-S-AV SRX220-S-AV-3
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX220	SRX220-S-SMB4-CS SRX220-S-SMB4-CS-3
WebSense Enhanced Web Filtering (1 year and 3 years subscription)	SRX220	SRX220-W-EWF SRX220-W-EWF-3

Features Requiring a License on SRX240 Devices

[Table 106 on page 240](#) lists the licenses you can purchase for each SRX Series software feature.

Table 106: SRX240 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signatures (1 year and 3 years subscription)	SRX240	SRX240-APPSEC-A-1 SRX240-APPSEC-A-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX240	SRX240-IDP SRX240-IDP-3
Kaspersky antivirus (1 year and 3 years subscription)	SRX240	SRX240-K-AV SRX240-K-AV-3
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX240	SRX240-SMB4-CS SRX240-SMB4-CS-3
Sophos antispam (1 year and 3 years subscription)	SRX240	SRX240-S2-AS SRX240-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX240	SRX240-S-AV SRX240-S-AV-3
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX240	SRX240-S-SMB4-CS SRX240-S-SMB4-CS-3
Websense Enhanced Web Filtering (1 year and 3 years subscription)	SRX240	SRX240-W-EWF SRX240-W-EWF-3

Features Requiring a License on SRX300 Devices

[Table 107 on page 241](#) lists the licenses you can purchase for each SRX Series software feature.

Table 107: SRX300 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX300	SRX300-ATP-BUN-1 SRX300-ATP-BUN-3
Application Security, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX300	SRX300-CS-BUN-1 SRX300-CS-BUN-3 SRX300-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX300	SRX300-W-EWF-1 SRX300-W-EWF-3 SRX300-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX300	SRX300-IPS-1 SRX300-IPS-3 SRX300-IPS-5

Features Requiring a License on SRX320 Devices

[Table 108 on page 242](#) lists the licenses you can purchase for each SRX Series software feature.

Table 108: SRX320 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year and 3 years subscription)	SRX320	SRX320-ATP-BUN-1 SRX320-ATP-BUN-3
Application Security, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX320	SRX320-CS-BUN-1 SRX320-CS-BUN-3 SRX320-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX320	SRX320-W-EWF-1 SRX320-W-EWF-3 SRX320-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX320	SRX320-IPS-1 SRX320-IPS-3 SRX320-IPS-5

Features Requiring a License on SRX340 Devices

[Table 109 on page 243](#) lists the licenses you can purchase for each SRX Series software feature.

Table 109: SRX340 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX340	SRX340-ATP-BUN-1 SRX340-ATP-BUN-3 SRX340-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year and 3 years subscription)	SRX340	SRX340-CS-BUN-1 SRX340-CS-BUN-3 SRX340-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX340	SRX340-W-EWF-1 SRX340-W-EWF-3 SRX340-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX340	SRX340-IPS-1 SRX340-IPS-3 SRX340-IPS-5
Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX340	SRX340-ATP-1 SRX340-ATP-3 SRX340-ATP-5
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year and 3 years subscription)	SRX340	SRX340-THRTFEED-1 SRX340-THRTFEED-3 SRX340-THRTFEED-5

Features Requiring a License on SRX345 Devices

Table 110 on page 244 lists the licenses you can purchase for each SRX Series software feature.

Table 110: SRX345 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX345	SRX345-ATP-BUN-1 SRX345-ATP-BUN-3 SRX345-ATP-BUN-5
Application Security, Antispam, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year and 3 years subscription)	SRX345	SRX345-CS-BUN-1 SRX345-CS-BUN-3 SRX345-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX345	SRX345-W-EWF-1 SRX345-W-EWF-3 SRX345-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX345	SRX345-IPS-1 SRX345-IPS-3 SRX345-IPS-5
Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX345	SRX345-ATP-1 SRX345-ATP-3 SRX345-ATP-5

Table 110: SRX345 Junos OS Feature License Model Number *(Continued)*

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year and 3 years subscription)	SRX345	SRX345-THRTFEED-1 SRX345-THRTFEED-3 SRX345-THRTFEED-5

Features Requiring a License on SRX550 Devices

[Table 111 on page 245](#) lists the licenses you can purchase for each SRX Series software feature.

Table 111: SRX550 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX550	SRX550-APPSEC-A-1 SRX550-APPSEC-A-3 SRX550-APPSEC-A-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX550	SRX550-W-EWF SRX550-W-EWF-3 SRX500-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX550	SRX550-IDP SRX550-IDP-3 SRX550-IDP-5

Table 111: SRX550 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Kaspersky antivirus (1 year, 3 years and 5 years subscription)	SRX550	SRX550-K-AV SRX550-K-AV-3 SRX550-K-AV-5
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX550	SRX550-SMB4-CS SRX550-SMB4-CS-3 SRX550-SMB4-CS-5
Remote Access (5 Concurrent users, NCP)	SRX550	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX550	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX550	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX550	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX550	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX550	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX550	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX550	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX550	SRX-RA1-1000

Table 111: SRX550 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX550	SRX550-THRTFEED-1 SRX550-THRTFEED-3 SRX550-THRTFEED-5
Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX550	SRX550-ATP-1 SRX550-ATP-3 SRX550-ATP-5
Sophos antispam (1 year, 3 years and 5 years subscription)	SRX550	SRX550-S2-AS SRX550-S2-AS-3 SRX550-S2-AS-5
Sophos antivirus (1 year and 3 years subscription)	SRX550	SRX550-S-AV SRX550-S-AV-3 SRX550-S-AV-5
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX550	SRX550-S-SMB4-CS SRX550-S-SMB4-CS-3 SRX550-S-SMB4-CS-5

Features Requiring a License on SRX650 Devices

[Table 112 on page 248](#) lists the licenses you can purchase for each SRX Series software feature.

Table 112: SRX650 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signature (1 year and 3 years subscription)	SRX650	SRX650-APPSEC-A-1 SRX650-APPSEC-A-3
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX650	SRX650-W-EWF SRX650-W-EWF-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX650	SRX650-IDP SRX650-IDP-3
Kaspersky antivirus (1 year and 3 years subscription)	SRX650	SRX650-K-AV SRX650-K-AV-3
Kaspersky antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX650	SRX650-SMB4-CS SRX650-SMB4-CS-3
Sophos antispam (1 year and 3 years subscription)	SRX650	SRX650-S2-AS SRX650-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX650	SRX650-S-AV SRX650-S-AV-3
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX650	SRX650-S-SMB4-CS SRX650-S-SMB4-CS-3

Features Requiring a License on SRX1400 Devices

[Table 113 on page 249](#) lists the licenses you can purchase for each SRX Series software feature.

Table 113: SRX1400 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signature (1 year and 3 years subscription)	SRX1400	SRX1400-APPSEC-A-1 SRX1400-APPSEC-A-3
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Antispam (1 year and 3 years subscription)	SRX1400	SRX1400-CS-BUN-1 SRX1400-CS-BUN-3
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX1400	SRX1400-W-EWF-1 SRX1400-W-EWF-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX1400	SRX1400-IDP SRX1400-IDP-3
Sophos antispam (1 year and 3 years subscription)	SRX1400	SRX1400-S-AS-1 SRX1400-S-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX1400	SRX1400-S-AV-1 SRX1400-S-AV-3
SRX Content Security (1 Incremental Logical Systems License for NetSecure)	SRX1400	SRX-1400-LSYS-1

Features Requiring a License on SRX1500 Devices

[Table 114 on page 250](#) lists the licenses you can purchase for each SRX Series software feature.

Table 114: SRX1500 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Antispam, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-ATP-BUN-1 SRX1500-ATP-BUN-3 SRX1500-ATP-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-A-BUN-1 SRX1500-A-BUN-3 SRX1500-A-BUN-5
Application Security, Antispam, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-CS-BUN-1 SRX1500-CS-BUN-3 SRX1500-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-W-EWF-1 SRX1500-W-EWF-3 SRX1500-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-IPS-1 SRX1500-IPS-3 SRX1500-IPS-5
Logical System License (1, 5, and 25 Incremental)	SRX1500	SRX-1500-LSYS-1 SRX-1500-LSYS-5 SRX-1500-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX1500	SRX-RA1-5

Table 114: SRX1500 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (10 Concurrent users, NCP)	SRX1500	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX1500	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX1500	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX1500	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX1500	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX1500	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX1500	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX1500	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX1500	SRX-RA1-2000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-THRTFEED-1 SRX1500-THRTFEED-3 SRX1500-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-ATP-1 SRX1500-ATP-3 SRX1500-ATP-5

Features Requiring a License on SRX3400 Devices

Table 115 on page 252 lists the licenses you can purchase for each SRX Series software feature.

Table 115: SRX3400 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year and 3 year subscription)	SRX3400	SRX3400-ATP-BUN-1 SRX3400-ATP-BUN-3 SRX3400-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year and 3 years subscription)	SRX3400	SRX3400-CS-BUN-1 SRX3400-CS-BUN-3
Application Security and Intrusion Prevention Signature (1 year and 3 year subscription)	SRX3400	SRX3400-APPSEC-A-1 SRX3400-APPSEC-A-3
Enhanced Web Filtering (1 year and 3 years subscription)	SRX3400	SRX3400-W-EWF-1 SRX3400-W-EWF-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX3400	SRX3K-IDP SRX3K-IDP-3
Logical System License (1, 5, and 25 Incremental)	SRX3400	SRX-3400-LSYS-1 SRX-3400-LSYS-5 SRX-3400-LSYS-25
Sophos antispam (1 year and 3 year subscription)	SRX3400	SRX3400-S-AS-1 SRX3400-S-AS-3

Table 115: SRX3400 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sophos antivirus (1 year and 3 year subscription)	SRX3400	SRX3400-S-AV-1 SRX3400-S-AV-3

Features Requiring a License on SRX3600 Devices

[Table 116 on page 253](#) lists the licenses you can purchase for each SRX Series software feature.

Table 116: SRX3600 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Antivirus, Enhanced Web Filtering (1 year and 3 years subscription)	SRX3600	SRX3600-CS-BUN-1 SRX3600-CS-BUN-3
Application Security and Intrusion Prevention Signature (1 year and 3 year subscription)	SRX3600	SRX3600-APPSEC-A-1 SRX3600-APPSEC-A-3
Enhanced Web Filtering (1 year and 3 years subscription)	SRX3600	SRX3600-W-EWF-1 SRX3600-W-EWF-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX3600	SRX3K-IDP SRX3K-IDP-3
Logical System License (1, 5, and 25 Incremental)	SRX3600	SRX-3600-LSYS-1 SRX-3600-LSYS-5 SRX-3600-LSYS-25

Table 116: SRX3600 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sophos antispam (1 year and 3 year subscription)	SRX3600	SRX3600-S-AS-1 SRX3600-S-AS-3
Sophos antivirus (1 year and 3 year subscription)	SRX3600	SRX3600-S-AV-1 SRX3600-S-AV-3

Features Requiring a License on SRX4100 Devices

[Table 117 on page 254](#) lists the licenses you can purchase for each SRX Series software feature.

Table 117: SRX4100 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-ATP-BUN-1 SRX4100-ATP-BUN-3 SRX4100-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-CS-BUN-1 SRX4100-CS-BUN-3 SRX4100-CS-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-A-BUN-1 SRX4100-A-BUN-3 SRX4100-A-BUN-5

Table 117: SRX4100 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Enhanced performance (upgrade to firewall IMIX performance up to 20G IMIX to the base 20G IMIX firewall throughput supported and application security)	SRX4100	SRX4100-E-P-UPG
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-W-EWF-1 SRX4100-W-EWF-3 SRX4100-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-IPS-1 SRX4100-IPS-3 SRX4100-IPS-5
Logical System License (1, 5, and 25 Incremental)	SRX4100	SRX-4100-LSYS-1 SRX-4100-LSYS-5 SRX-4100-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX4100	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX4100	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX4100	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX4100	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX4100	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX4100	SRX-RA1-150

Table 117: SRX4100 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (250 Concurrent users, NCP)	SRX4100	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX4100	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX4100	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX4100	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX4100	SRX-RA1-5000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-THRTFEED-1 SRX4100-THRTFEED-3 SRX4100-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-ATP-1 SRX4100-ATP-3 SRX4100-ATP-5

Features Requiring a License on SRX4200 Devices

[Table 118 on page 257](#) lists the licenses you can purchase for each SRX Series software feature.

Table 118: SRX4200 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-ATP-BUN-1 SRX4200-ATP-BUN-3 SRX4200-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-CS-BUN-1 SRX4200-CS-BUN-3 SRX4200-CS-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-A-BUN-1 SRX4200-A-BUN-3 SRX4200-A-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-W-EWF-1 SRX4200-W-EWF-3 SRX4200-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-IPS-1 SRX4200-IPS-3 SRX4200-IPS-5
Logical System License (1, 5, and 25 Incremental)	SRX4200	SRX-4200-LSYS-1 SRX-4200-LSYS-5 SRX-4200-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX4200	SRX-RA1-5

Table 118: SRX4200 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (10 Concurrent users, NCP)	SRX4200	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX4200	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX4200	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX4200	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX4200	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX4200	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX4200	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX4200	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX4200	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX4200	SRX-RA1-5000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-THRTFEED-1 SRX4200-THRTFEED-3 SRX4200-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX4200	SRX4200-ATP-1 SRX4200-ATP-3 SRX4200-ATP-5

Features Requiring a License on SRX4600 Devices

Table 119 on page 259 lists the licenses you can purchase for each SRX Series software feature.

Table 119: SRX4600 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-ATP-BUN-1 SRX4600-ATP-BUN-3 SRX4600-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-CS-BUN-1 SRX4600-CS-BUN-3 SRX4600-CS-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-A-BUN-1 SRX4600-A-BUN-3 SRX4600-A-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-W-EWF-1 SRX4600-W-EWF-3 SRX4600-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-IPS-1 SRX4600-IPS-3 SRX4600-IPS-5

Table 119: SRX4600 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Logical System License (1, 5, and 25 Incremental)	SRX4600	SRX-4600-LSYS-1 SRX-4600-LSYS-5 SRX-4600-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX4600	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX4600	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX4600	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX4600	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX4600	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX4600	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX4600	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX4600	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX4600	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX4600	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX4600	SRX-RA1-5000

Table 119: SRX4600 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-THRTFEED-1 SRX4600-THRTFEED-3 SRX4600-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-ATP-1 SRX4600-ATP-3 SRX4600-ATP-5

Features Requiring a License on SRX5400 Devices

[Table 120 on page 261](#) lists the licenses you can purchase for each SRX Series software feature.

Table 120: SRX5400 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-ATP-BUN-1 SRX5400-ATP-BUN-3 SRX5400-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-CS-BUN-1 SRX5400-CS-BUN-3 SRX5400-CS-BUN-5

Table 120: SRX5400 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Application Security and Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-APPSEC-1 SRX5400-APPSEC-3 SRX5400-APPSEC-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-W-EWF-1 SRX5400-W-EWF-3 SRX5400-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX5400	SRX5K-IDP SRX5K-IDP-3 SRX5K-IDP-5
Logical System License (1, 5, and 25 Incremental)	SRX5400	SRX-5400-LSYS-1 SRX-5400-LSYS-5 SRX-5400-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX5400	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX5400	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX5400	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX5400	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX5400	SRX-RA1-100

Table 120: SRX5400 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (150 Concurrent users, NCP)	SRX5400	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX5400	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX5400	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX5400	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX5400	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX5400	SRX-RA1-5000
Remote Access (10K Concurrent users, NCP)	SRX5400	SRX-RA1-10000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-THRTFEED-1 SRX5400-THRTFEED-3 SRX5400-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX5400	SRX5400-ATP-1 SRX5400-ATP-3 SRX5400-ATP-5

Features Requiring a License on SRX5600 Devices

[Table 121 on page 264](#) lists the licenses you can purchase for each SRX Series software feature.

Table 121: SRX5600 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-ATP-BUN-1 SRX5600-ATP-BUN-3 SRX5600-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-CS-BUN-1 SRX5600-CS-BUN-3 SRX5600-CS-BUN-5
Application Security and Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-APPSEC-A-1 SRX5600-APPSEC-A-3 SRX5600-APPSEC-A-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-W-EWF-1 SRX5600-W-EWF-3 SRX5600-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX5600	SRX5K-IDP SRX5K-IDP-3 SRX5K-IDP-5
Logical System License (1, 5, and 25 Incremental)	SRX5600	SRX-5600-LSYS-1 SRX-5600-LSYS-5 SRX-5600-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX5600	SRX-RA1-5

Table 121: SRX5600 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (10 Concurrent users, NCP)	SRX5600	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX5600	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX5600	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX5600	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX5600	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX5600	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX5600	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX5600	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX5600	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX5600	SRX-RA1-5000
Remote Access (10K Concurrent users, NCP)	SRX5600	SRX-RA1-10000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-THRTFEED-1 SRX5600-THRTFEED-3 SRX5600-THRTFEED-5

Table 121: SRX5600 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-ATP-1
		SRX5600-ATP-3
		SRX5600-ATP-5

Features Requiring a License on SRX5800 Devices

[Table 122 on page 266](#) lists the licenses you can purchase for each SRX Series software feature.

Table 122: SRX5800 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-ATP-BUN-1 SRX5800-ATP-BUN-3 SRX5800-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-CS-BUN-1 SRX5800-CS-BUN-3 SRX5800-CS-BUN-5
Application Security and Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-APPSEC-A-1 SRX5800-APPSEC-A-3 SRX5800-APPSEC-A-5

Table 122: SRX5800 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-W-EWF-1 SRX5800-W-EWF-3 SRX5800-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX5800	SRX5K-IDP SRX5K-IDP-3 SRX5K-IDP-5
Logical System License (1, 5, and 25 Incremental)	SRX5800	SRX-5800-LSYS-1 SRX-5800-LSYS-5 SRX-5800-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX5800	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX5800	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX5800	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX5800	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX5800	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX5800	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX5800	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX5800	SRX-RA1-500

Table 122: SRX5800 Junos OS Feature License Model Number (Continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (1000 Concurrent users, NCP)	SRX5800	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX5800	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX5800	SRX-RA1-5000
Remote Access (10K Concurrent users, NCP)	SRX5800	SRX-RA1-10000
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-THRTFEED-1 SRX5800-THRTFEED-3 SRX5800-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX5800	SRX5800-ATP-1 SRX5800-ATP-3 SRX5800-ATP-5

SEE ALSO

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices

Understanding Chassis Cluster Licensing Requirements

There is no separate license required for chassis cluster. However, some Junos OS software features require a license to activate the feature. To configure and use the licensed feature in a chassis cluster setup, you must purchase one license per feature per device and the license needs to be installed on both nodes of the chassis cluster. Both devices (which are going to form a chassis cluster) must have the valid, identical features licenses installed on them. If both devices do not have an identical set of licenses, then after a failover, a particular feature (that is, a feature that is not licensed on both devices) might not work or the configuration might not synchronize in chassis cluster formation. Licensing is usually ordered when the device is purchased, and this information is bound to the chassis serial

number. For example, Intrusion Detection and Prevention (IDP) is a licensed feature and the license for this specific feature is tied to the serial number of the device.

For information about how to purchase software licenses, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

Installing Licenses on the SRX Series Devices in a Chassis Cluster

You can add a license key from a file or a URL, from a terminal, or from the J-Web user interface. Use the *filename* option to activate a perpetual license directly on the device. Use the *url* option to send a subscription-based license key entitlement (such as unified threat management [UTM]) to the Juniper Networks licensing server for authorization. If authorized, the server downloads the license to the device and activates it.

Before adding new licenses, complete the following tasks:

- Purchase the required licenses.
- Set the chassis cluster node ID and the cluster ID. See *Example: Setting the Node ID and Cluster ID for Security Devices in a Chassis Cluster*.
- Ensure that your SRX Series device has a connection to the Internet (if particular feature requires Internet or if (automatic) renewal of license through internet is to be used). For instructions on establishing basic connectivity, see the Getting Started Guide or Quick Start Guide for your device.

To install licenses on the primary node of an SRX Series device in a chassis cluster:

1. Run the `show chassis cluster status redundancy-group 0` command and identify which node is primary for redundancy group 0 on your SRX Series device.

```
{primary:node0}
user@host> show chassis cluster status redundancy-group 0
```

Cluster ID: 9

Node	Priority	Status	Preempt	Manual failover
Redundancy group: 0 , Failover count: 1				
node0	254	primary	no	no
node1	1	secondary	no	no

Output to this command indicates that node 0 is primary and node 1 is secondary.

2. From CLI operational mode, enter one of the following CLI commands:

- To add a license key from a file or a URL, enter the following command, specifying the filename or the URL where the key is located:

```
user@host> request system license add filename | url
```

- To add a license key from the terminal, enter the following command:

```
user@host> request system license add terminal
```

3. When prompted, enter the license key, separating multiple license keys with a blank line.
If the license key you enter is invalid, an error appears in the CLI output when you press Ctrl+d to exit license entry mode.
4. Verify the installed licenses.
For more details, see [Adding New Licenses \(CLI Procedure\)](#).

To install licenses on the secondary node of an SRX Series device in a chassis cluster:

1. Initiate a failover to change node 1 (secondary node) to be the primary node:

```
{primary:node0}
```

```
user@host> request chassis cluster failover redundancy-group 0 node 1
```

```
-----
```

```
Initiated manual failover for redundancy group 0
```

NOTE: Initiating a failover to the secondary node is not required if you are installing licenses manually on the device. However, if you are installing the license directly from the Internet, you must initiate a failover.

2. Repeat the steps described in ["No Link Title" on page 269](#) to install licenses on the secondary node.
3. Reboot the device for licenses to take effect.

NOTE: You must install the updated license on both nodes of the chassis cluster before the existing license expires.

[illegible]

TIP: If you are not using any specific feature or license , you can delete the license from both devices in a chassis cluster. You need to connect to each node separately to delete the licenses. For details, see ["Example: Deleting a License Key" on page 289](#).

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You can verify the licenses installed on both the devices in a chassis cluster setup by using the `show system license installed` command to view license usage.

Licenses details on node 0.

```
user@host> show system license installed
{primary:node0}
user@host> show system license
License usage:
```

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
logical-system	1	26	0	permanent
services-offload	0	1	0	permanent

Licenses installed:

License identifier: JUNOS363684

License version: 2

Valid for device: JN111A654AGB

Features:

services-offload - services offload mode
permanent

License identifier: JUNOS531744

License version: 4

Valid for device: JN111A654AGB

Features:

services-offload - services offload mode
permanent

License identifier: JUNOS558173

License version: 4

Valid for device: JN111A654AGB

Features:

logical-system-25 - Logical System Capacity
permanent

Licenses details on node 1.

{secondary-hold:node1}

user@host> show system license

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
idp-sig	0	1	0	permanent
logical-system	1	26	0	permanent
services-offload	0	1	0	permanent

Licenses installed:

License identifier: JUNOS209661

License version: 2

Valid for device: JN111AB4DAGB

```

Features:
  idp-sig          - IDP Signature
  permanent

License identifier: JUNOS336648
License version: 2
Valid for device: JN111AB4DAGB
Features:
  logical-system-25 - Logical System Capacity
  permanent

License identifier: JUNOS363685
License version: 2
Valid for device: JN111AB4DAGB
Features:
  services-offload - services offload mode
  permanent

License identifier: JUNOS531745
License version: 4
Valid for device: JN111AB4DAGB
Features:
  services-offload - services offload mode
  permanent

```

Meaning

Use the fields License version and Features to make sure that licenses installed on both the nodes are identical.

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices

This topic provides licensing information for SRX Series devices running logical systems and tenant systems.

Starting in Junos OS Release 18.3R1, an SRX Series device running logical systems or tenant systems includes three licenses by default. One license for a primary logical system and the other two licenses for user-defined logical system or tenant system. The system does not allow you to configure additional logical systems or tenant systems if the number of logical systems and tenant systems exceeds the number of available licenses. In the earlier releases, the system allowed you to configure an additional logical system even if the number of logical systems exceeds the number of available licenses, but with a warning message of non-licensed logical-systems do not pass traffic. You can purchase licenses for

additional logical systems and tenant systems that you intend to create. If you intend to configure an interconnect logical system or interconnect tenant system to use as a switch, it also requires separate licenses.

We enforce that you do not configure more logical systems or tenant systems than the number of licenses you have purchased. If the number of logical systems or tenant systems that you attempt to configure exceeds the number of licenses that you have purchased, then the system displays an error message similar to the following:

```
user@host> commit
error: 2 more multitenancy license(s) are needed!
error: configuration check-out failed
```

You can use the **show system license status all-logical-systems-tenants** or **show system license usage** commands to view the active logical systems and tenant systems on the device.

```
user@host> show system license status all-logical-systems-tenants
logical system name  license status
root-logical-system  enabled
LSYS2                enabled
LSYS0                enabled
LSYS11               enabled
LSYS12               enabled
LSYS23               enabled
TSYS1                enabled
TSYS2                enabled
TSYS3                enabled
```

```
user@host> show system license usage
```

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
logical-system	9	11	0	2019-05-18 08:00:00 CST

When you use SRX Series devices running logical systems or tenant systems in a *chassis cluster*, you must purchase and install the same number of licenses for each node in the chassis cluster. Logical systems or tenant systems licenses pertain to a single chassis, or node, within a chassis cluster and not to the cluster collectively.

SEE ALSO

Understanding Logical Systems for SRX Series Services Gateways
Understanding Tenant Systems

Understanding UTM Licensing

IN THIS SECTION

- [Updating UTM Licenses \(CLI Procedure\) | 276](#)

The majority of UTM features function as a subscription service requiring a license. You can redeem this license once you have purchased your subscription license SKUs. You redeem your license by entering your authorization code and chassis serial number into the Customer Service license portal interface. Once your entitlement is generated, you can use the CLI from your device to send a license update request to the license portal. The license portal then sends your subscription license directly to the device.

NOTE: The products supported by the [Juniper Agile Licensing](#) (JAL) portal includes: QFX series, SRX Series, EX Series, NFX, vBNG, vMX, vSRX, and ACX. For other Juniper products (SPACE, JSA, SBR Carrier, Screen OS and so on) access the [License Management System](#) (LMS).

NOTE: UTM requires 1 GB of memory.

Table 123: UTM Feature Subscription Service License Requirements

UTM Feature	Requires License
Antispam	Yes
Antivirus: sophos	Yes
Content Filtering	No

Web Filtering: integrated	Yes
Web Filtering: redirect	No
Web Filtering: local	No
Web Filtering: enhanced	Yes

NOTE: License enforcement is supported on all SRX Series devices. Licensed features including anti-virus or Enhanced Web Filtering will not function until a license has been installed. The license must be installed after installing or upgrading to a new Junos OS Release version. Unlicensed features such as UTM blocklists and allowlists will continue to function without a license.

Updating UTM Licenses (CLI Procedure)

To apply the UTM subscription license to SRX Series devices, use the following CLI command:

```
user@host> request system license update
```

After you install the license for SRX300, SRX320, SRX340, SRX345, SRX550M, and SRX1400 devices, reboot the device. The device reserves additional memory for UTM features and hence decreases the session capacity.

For SRX3400, SRX3600, SRX4600, SRX5600 and SRX5800 devices, use the following command to manually reallocate the memory for UTM features:

```
user@host> set security forwarding-process application-services enable-utm-memory
```

Reboot the device for the configuration to take effect.

NOTE: SRX1500, SRX4100 and SRX4200 devices have enough memory for UTM. These devices do not require any command for memory allocation.

SEE ALSO

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices

Installing the IPS License (CLI)

You can either download an IPS license from the license server, or manually install IPS if you received a license from Juniper Networks.

Access the SRX Series device console through the serial cable plugged into the console port on the device or by using a terminal session such as SSH.

To apply your IPS subscription license to the device, use the following CLI command:

```
user@host> request system license update
```

If you received a license for manual installation, perform the following tasks:

1. Access the SRX Series Services Gateway console either by plugging the serial cable into the console port on the device or by using a terminal session such as SSH.
2. Check for an IPS license (required for all IPS updates):

```
user@host> show system license
```

License usage:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
logical-system	0	0	0	permanent

3. If there are no licenses installed, obtain the chassis serial number by using the following CLI command:

```
user@host> show chassis hardware
```

4. A serial number is needed to generate the IPS license. You can add a license key from a file or URL or from the terminal.
 - From a file or URL:

```
user@host> request system license add <file name>
```


- From the terminal:

```
user@host> request system license add terminal
```

5. When prompted, enter the license key, separating multiple license keys with a blank line. If the license key you enter is invalid, an error is generated when you press Ctrl-D to exit license entry mode.
6. Verify the system license by entering the `show system license` command.

```
user@host> show system license
```

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
idp-sig		4	1	0 permanent

Licenses installed:

License identifier: JUNOS208639

License version: 2

Valid for device: AA4508AD0005

Features:

idp-sig - IDP Signature

date-based, 2009-04-06 08:00:00 GMT-8 - 2010-04-06 08:00:00 GMT-8

SEE ALSO

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices

Installing and Verifying Licenses for an Application Signature Package

The Junos OS application signature package update is a separately licensed subscription service. You must install the application signature package update license key on your device to download and install the signature database updates provided by Juniper Networks. If your license key expires, you can continue to use the locally stored application signature package content.

Licensing is usually ordered when the device is purchased, and this information is bound to the chassis serial number. These instructions assume that you already have the license. If you did not order the license during the purchase of the device, contact your account team or Juniper customer care for

assistance. For more information, refer to the Knowledge Base article KB9731 at <https://kb.juniper.net/InfoCenter/index?page=home>.

Starting from Junos OS 15.1X49-D30 and Junos OS Release 17.3R1, on SRX1500 devices, AppSecure is part of Junos Software Enhanced (JSE) software license package. There is no separate license key for AppSecure is available. You must use JSE software license on your device to download and install the AppID signature database updates, or to use other AppSecure features such as AppFW, AppQoS, and AppTrack.

Starting from Junos OS 15.1X49-D30 and Junos OS Release 17.3R1, on SRX300, SRX320, SRX340, and SRX345 devices, AppSecure is part of Junos Software Enhanced (JSE) software license package. There is no separate license key for AppSecure is available. You must use JSE software license on your device to download and install the AppID signature database updates, or to use other AppSecure features such as AppFW, AppQoS, and AppTrack.

Starting from 15.1X49-D65 and Junos OS Release 17.3R1, on SRX4100, and SRX4200 devices, AppSecure is part of Junos Software Enhanced (JSE) license package. There is no separate license key for AppSecure is available. You must use JSE software license on your device to download and install the AppID signature database updates, or to use other AppSecure features such as AppFW, AppQoS, and AppTrack.

Junos Software Base (JSB) package does not include application signatures. Please refer to the product Data Sheets at [SRX Series Services Gateways](#) for details, or contact your Juniper Account Team or Juniper Partner.

You can install the license on the SRX Series device using either the automatic method or manual method as follows:

- Install your license automatically on the device.

To install or update your license automatically, your device must be connected to the Internet .

```
user@host> request system license update
```

```
Trying to update license keys from https://ae1.juniper.net, use 'show system license' to check status.
```

- Install the licenses manually on the device.

```
user@host> request system license add terminal
```

[Type ^D at a new line to end input,
enter blank line between each license key]

Paste the license key and press Enter to continue.

- Verify the license is installed on your device.

Use the **show system license** command command to view license usage, as shown in the following example:

```
License usage:
Feature name          Licenses used  Licenses installed  Licenses needed  Expiry
logical-system        4              1                   3                permanent

License identifier: JUNOSXXXXXX
License version: 2
Valid for device: AA4XXXX005
Features:
  appid-sig           - APPID Signature
  date-based, 2014-02-17 08:00:00 GMT-8 - 2015-02-11 08:00:00 GMT-8
```

The output sample is truncated to display only license usage details.

SEE ALSO

| [Adding New Licenses \(CLI Procedure\)](#)

Release History Table

Release	Description
18.3R1	Starting in Junos OS Release 18.3R1, an SRX Series device running logical systems or tenant systems includes three licenses by default.

15.1X49-D65	Starting from 15.1X49-D65 and Junos OS Release 17.3R1, on SRX4100, and SRX4200 devices, AppSecure is part of Junos Software Enhanced (JSE) license package.
15.1X49-D40	Starting from Junos OS 15.1X49-D30 and Junos OS Release 17.3R1, on SRX300, SRX320, SRX340, and SRX345 devices, AppSecure is part of Junos Software Enhanced (JSE) software license package.
15.1X49-D30	Starting from Junos OS 15.1X49-D30 and Junos OS Release 17.3R1, on SRX1500 devices, AppSecure is part of Junos Software Enhanced (JSE) software license package.

Managing Junos OS Licenses

IN THIS SECTION

- [Displaying License Keys in J-Web | 281](#)
- [Downloading License Keys | 281](#)
- [Generating a License Key | 282](#)
- [Saving License Keys | 282](#)
- [Updating License Keys \(CLI\) | 283](#)
- [Example: Adding a New License Key | 284](#)
- [Example: Deleting a License Key | 289](#)

Displaying License Keys in J-Web

To display license keys installed on the device:

1. In the J-Web interface, under **Administration>License Management>Installed Licenses**, click **Add** to add a new license key.
2. Under **Installed Licenses**, click **Display Keys** to display all the license keys installed on the device.
A screen displaying the license keys in text format appears. Multiple licenses are separated by a blank line.

Downloading License Keys

To download license keys installed on the device:

1. In the J-Web interface, under **Administration>License Management>Installed Licenses**, click **Download Keys** to download all the license keys installed on the device to a single file.
2. Select **Save it to disk** and specify the file to which the license keys are to be written.

Generating a License Key

To generate a license key:

1. Gather the authorization code that you received when you purchased your license as well as your device serial number.
2. Go to the Juniper Networks licensing page at:
<https://www.juniper.net/lcrs/generateLicense.do>
3. Enter the device serial number and authorization code in the webpage and click **Generate**.
Depending on the type of license you purchased, you will receive one of the following responses:
 - License key—If you purchased a perpetual license, you will receive a license key from the licensing management system. You can enter this key directly into the system to activate the feature on your device.
 - License key entitlement—If you purchased a subscription-based license, you will receive a license key entitlement from the licensing management system. You can use this entitlement to validate your license on the Juniper Networks licensing server and download the feature license from the server to your device.

Saving License Keys

To save license keys installed on the device:

From operational mode, save the installed license keys to a file or URL.

```
user@host>request system license save filename | url
```

For example, the following command saves the installed license keys to a file named `license.config`:

```
request system license save ftp://user@host/license.conf
```

SEE ALSO

| [Junos OS Feature License Keys](#) | 108

Updating License Keys (CLI)

Use this task to update a subscription license or a trial license. You can do immediate update from command mode or set up automatic updates using the CLI.

You can set up a proxy server to allow indirect access to the license portal. To set up a proxy server for license updates, see [Example: Configuring a Proxy Server for License Updates](#).

The products supported by the [Juniper Agile Licensing](#) (JAL) portal includes: QFX series, SRX Series, EX Series, NFX, vBNG, vMX, vSRX, and ACX. For other Juniper products (SPACE, JSA, SBR Carrier, Screen OS and so on) access the [License Management System](#) (LMS).

To do immediate update of a license key from command mode:

From operational mode, do one of the following tasks:

- Update the license keys immediately from the license portal. You can only use this command to update subscription-based licenses (such as UTM).

```
user@host> request system license update
```

The **request system license update** command always uses the default license portal.

- Update the trial license keys immediately from the license portal.

```
user@host>request system license update trial
```

To enable automatic license updates from the CLI:

1. Contact your account team or Juniper Networks Customer Care to extend the validity period of existing license keys and obtain the URL for a valid update server.
2. Once you have successfully extended your license key and received the update server URL, configure the auto-update parameter:

```
user@host> set system license autoupdate url https://ae1.juniper.net/
```

3. (Optional) Configure renew options. The following sample allows the device to contact the license server 30 days before the current license expires and sends an automatic update request every 6 hours.

```
user@host> set system license renew before-expiration 30
user@host> set system license renew interval 6
```

SEE ALSO

[Understanding Chassis Cluster Licensing Requirements | 268](#)

[Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices | 273](#)

Example: Adding a New License Key

IN THIS SECTION

- [Requirements | 284](#)
- [Overview | 284](#)
- [Configuration | 285](#)
- [Verification | 287](#)

This example shows how to add a new license key.

Requirements

Before you begin, confirm that your Junos OS feature requires you to purchase, install, and manage a separate software license.

Overview

You can add a license key from a file or URL, from a terminal, or from the J-Web user interface. Use the *filename* option to activate a perpetual license directly on the device. (Most feature licenses are perpetual.) Use the *url* to send a subscription-based license key entitlement (such as UTM) to the Juniper Networks licensing server for authorization. If authorized, the server downloads the license to the device and activates it.

In this example, the file name is bgp-reflection.

Configuration

IN THIS SECTION

- [Procedure | 285](#)

Procedure

CLI Quick Configuration

To quickly configure this section of the example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the [edit] hierarchy level, and then enter `commit` from configuration mode.

From operational mode, you can add a license key in either way:

- From a file or URL:

```
user@hostname> request system license add bgp-reflection
```

- From the terminal:

```
user@hostname> request system license add terminal
```

GUI Quick Configuration

Step-by-Step Procedure

To add a new license key:

1. In the J-Web user interface, under **Administration>License Management>Installed Licenses**, click **Add** to add a new license key.
2. Do one of the following, using a blank line to separate multiple license keys:
 - In the `License File URL` box, type the full URL to the destination file containing the license key to be added.

- In the License Key Text box, paste the license key text, in plain-text format, for the license to be added.

3. Click **OK** to add the license key.

If you added the SRX100 Memory Upgrade license, the device reboots immediately and comes back up as a high-memory device.

4. Click **OK** to check your configuration and save it as a candidate configuration.

5. If you are done configuring the device, click **Commit Options>Commit**.

Step-by-Step Procedure

To add a new license key:

1. From operational mode, add a license key in either way:

- From a file or URL:

```
user@host> request system license add bgp-reflection
```

- From the terminal:

```
user@host>request system license add terminal
```

2. When prompted, enter the license key, separating multiple license keys with a blank line. If the license key you enter is invalid, an error is generated when you press Ctrl-D to exit license entry mode.

If you added the SRX100 Memory Upgrade license, the device reboots immediately and comes back up as a high-memory device.

Results

From operational mode, confirm your configuration by entering the `show system license` command. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@hostname> show system license
```

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
bgp-reflection	0	1	0	permanent

Licenses installed:

License identifier: G0300000xxxx

License version: 2

Valid for device: JN001875AB

Features:

bgp-reflection - Border Gateway Protocol route reflection
permanent

License identifier: G0300000xxxx

License version: 2

Valid for device: JN001875AB

If you are done configuring the device, enter `commit` from configuration mode.

Verification

IN THIS SECTION

- [Verifying Installed Licenses | 288](#)
- [Verifying License Usage | 288](#)
- [Verifying Installed License Keys | 288](#)

Confirm that the configuration is working properly.

Verifying Installed Licenses

Purpose

Verify that the expected licenses have been installed and are active on the device.

Action

From operational mode, enter the `show system license` command.

The output shows a list of the licenses used and a list of the licenses installed on the device and when they expire.

Verifying License Usage

Purpose

Verify that the licenses fully cover the feature configuration on the device.

Action

From operational mode, enter the `show system license usage` command.

```
user@hostname> show system license usage
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
bgp-reflection	1	1	0	permanent

The output shows a list of the licenses installed on the device and how they are used.

Verifying Installed License Keys

Purpose

Verify that the license keys were installed on the device.

Action

From operational mode, enter the `show system license keys` command.

```
user@hostname> show system license keys
```

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
      XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
      XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
      XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
```

The output shows a list of the license keys installed on the device. Verify that each expected license key is present.

Example: Deleting a License Key

IN THIS SECTION

- [Requirements | 289](#)
- [Overview | 289](#)
- [Configuration | 290](#)
- [Verification | 291](#)

This example shows how to delete a license key.

Requirements

Before you delete a license key, confirm that it is no longer needed.

Overview

You can delete a license key from the CLI or J-Web user interface. In this example, the license ID is G0300000xxxx.

Configuration

IN THIS SECTION

- [Procedure | 290](#)

Procedure

CLI Quick Configuration

To quickly configure this section of the example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, copy and paste the commands into the CLI at the [edit] hierarchy level, and then enter `commit` from configuration mode.

```
user@host> request system license delete G0300000xxxx
```

GUI Quick Configuration

Step-by-Step Procedure

To delete a license key:

1. In the J-Web user interface, under **Administration>License Management>Installed Licenses**.
2. Select the check box of the license or licenses you want to delete.
3. Click **Delete**.

If you deleted the SRX100 Memory Upgrade license, the device reboots immediately and comes back up as a low-memory device.

4. Click **OK** to check your configuration and save it as a candidate configuration.
5. If you are done configuring the device, click **Commit Options>Commit**.

Step-by-Step Procedure

To delete a license key:

1. From operational mode, for each license, enter the following command and specify the license ID. You can delete only one license at a time.

```
user@host> request system license delete G0300000xxxx
```

If you deleted the SRX100 Memory Upgrade license, the device reboots immediately and comes back up as a low-memory device.

Results

From configuration mode, confirm your deletion by entering the `show system license` command. The license key you deleted will be removed. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

If you are done configuring the device, enter `commit` from configuration mode.

Verification

IN THIS SECTION

- [Verifying Installed Licenses | 291](#)

Confirm that the configuration is working properly.

Verifying Installed Licenses

Purpose

Verify that the expected licenses have been removed from the device.

Action

From operational mode, enter the `show system license` command.

Licenses for vSRX

IN THIS SECTION

- vSRX Feature Licenses Overview | 292
- Managing Licenses for vSRX | 301
- vSRX License Model Numbers | 309
- vSRX License Model Numbers for Contrail, KVM, Microsoft Hyper-V, and VMware | 312

vSRX Feature Licenses Overview

IN THIS SECTION

- vSRX License Procurement and Renewal | 293
- vSRX Evaluation License | 294
- License Types | 295
- Throughput | 296
- License Duration | 296
- Individual (à la carte) Feature Licenses | 297
- Bundled Licenses | 297
- Stacking Licenses | 297
- vSRX License Keys Components | 298
- License Management Fields Summary | 298

Starting January 2020, Juniper Networks is transitioning to the Flex Software Subscription Licensing Model for vSRX. If you are not currently using the legacy licenses model, refer the [vSRX Flex Software Subscription Licensing Model](#).

If you have any questions, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/> and they will assist you in choosing the best licensing model for your application.

Some Junos OS software features require a *license* to activate the feature.

To enable a licensed feature, you need to purchase, install, manage, and verify a license key that corresponds to each licensed feature. To conform to software feature licensing requirements, you must purchase one license per feature per instance. The presence of the appropriate software unlocking key on your virtual instance allows you to configure and use the licensed feature.

If applicable for your vSRX deployment, vSRX pay-as-you-go images do not require any separate licenses.

vSRX License Procurement and Renewal

Licenses are usually ordered when the software application is purchased, and this information is bound to a customer ID. If you did not order the licenses when you purchased your software application, contact your account team or Juniper Networks Customer Care for assistance.

Licenses can be procured from the [Juniper Networks License Management System \(LMS\)](#).

For license renewal, use the `show system license` command to find the Juniper vSRX software serial number that you use to renew a license.

```
vsr> show system license
```

```
License usage:
```

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
Virtual Appliance	1	1	0	58 days

```
Licenses installed:
```

```
License identifier: E420588955
```

```
License version: 4
```

```
Software Serial Number: 20150625
```

```
Customer ID: vSRX-JuniperEval
```

```
Features:
```

```
Virtual Appliance - Virtual Appliance  
count-down, Original validity: 60 days
```

```
License identifier: JUNOS657051
```

```
License version: 4
```

```
Software Serial Number: 9XXXXAXXXXXX9
```

```
Customer ID: MyCompany
```

```
Features:
```

```
Virtual Appliance - Virtual Appliance  
permanent
```


Do not use the `show chassis hardware` command to get the serial number on vSRX, because that command is only appropriate for the physical SRX Series devices. Also, the license for advanced security features available on the physical SRX Series devices cannot be used with vSRX deployments.

If you are performing a software downgrade with licenses installed, you will see an error message in the CLI when you try to configure the licensed features or run the `show system license status` command.

We recommend deleting existing licenses before performing a software downgrade.

vSRX Evaluation License

To speed deployment of licensed features, the vSRX software image provides you with a 60-day product evaluation license and a 30-day advanced security features license, both of which allow you to use vSRX and licensed features for a specified period without having to install a license key.

Table 124 on page 294 lists vSRX evaluation license types.

Table 124: vSRX Evaluation License Type

License Package	Type	Period	License Model Number
Trial license (temporary for evaluation only)	Product evaluation-Basic	60 days	-
	Product evaluation-Advanced features	30 days	-

Product Evaluation License

The vSRX software image includes a 60-day trial license. When you download and install the vSRX image, you are entitled to use this trial license for 60 days. It is intended as an evaluation license for using vSRX. This product-unlocking license is required to use the basic functions of the vSRX, such as networking, routing, and basic security features (such as stateful firewall).

The use of the 60-day trial license does not include vSRX support unless you already have a pre-existing vSRX support contract. If you require support during this 60-day evaluation period, please work with your Juniper Account team or go to the J-Net Community forum (<https://forums.juniper.net/>) and view the Support topics under the vSRX category.

Within 30 days of the license expiration date, a license expiration warning appears each time you log in to the vSRX instance. After the product evaluation license expires, you will not be able to use the vSRX;

it will be disabled and flow configuration options will not work (the vSRX will stop forwarding traffic). At this point, only management interfaces and CLI configurations are preserved.

Advanced Security Features Evaluation License

The advanced security features license is a 30-day trial license for vSRX that is required for advanced security features such as UTM, IDP, and AppSecure. You can download the trial license for advanced security features from the [vSRX Free Trial License Page](#).

The 30-day trial license period begins on the day you enable the enhanced security features after you install the 60-day product evaluation license for vSRX. To continue using vSRX features after the 30-day license period expires, you must purchase and install the license; otherwise, the features are disabled. If the license for advanced security features expires while the evaluation license (product unlocking license) is still valid, only the advanced security features that require a license are disabled.

The UTM advanced features have a slightly different trial license strategy. UTM does not require a 30-day trial license but only a 30-day grace period. Once the 30-day advanced security features trial license expires, Juniper Networks supports a 30-day grace period for you to continue using UTM features. The 30-day grace period goes into effect after the 30-trial license expires.

There is also a 30-day trial license available for Juniper Sky Advanced Threat Prevention (ATP). This is a second license that you can apply for a 30-day period in addition to the advanced security features license for vSRX to enable the Juniper Sky ATP features. You can download the Juniper Sky ATP trial license from the [vSRX Free Trial License Page](#).

License Types

Juniper Networks provides a variety of licenses for both basic firewall features and advanced security features for different throughputs and durations.

If you want to use vSRX to provide basic firewall features, you can use standard (basic) licenses. However, to use some of the more advanced security features, such as AppSecure, IDP, and UTM, you might need to purchase advanced features licenses.

The high-level categories for licenses are:

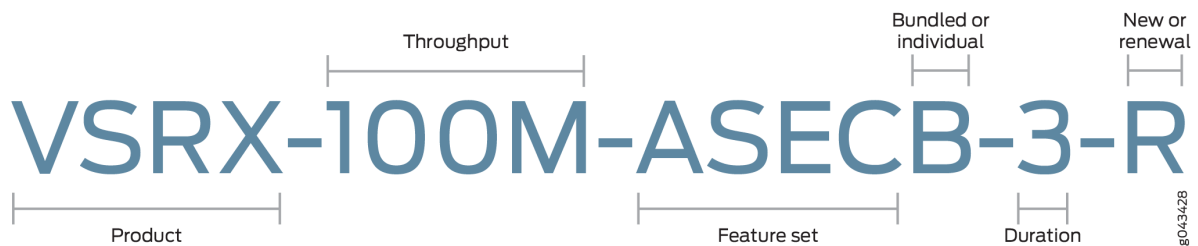
- **Throughput**—All licenses have an associated throughput. Throughput rates include 1 Gbps, 2 Gbps, and 4 Gbps on most platforms.
- **Features**—Licenses are available for different combinations of feature sets, from standard (STD) through Content Security Bundled (CSB).
- **Individual or bundled**—Licenses can be individual (à la carte) licenses for a set of features, or can be bundled together to provide a broad range of features in one easy license to maintain.

Individual licenses are not supported.

- **Duration**—All licenses have an associated time duration. You can purchase basic licenses as perpetual (never expire) or subscription based (1-year or 3-year duration). All vSRX licenses are subscription based.
- **New or renewal**—All subscription licenses are either new (first-time purchase) or renewals (extending the license duration when the initial new subscription license is about to expire).

Figure 22 on page 296 shows a sample license SKU and identifies how each field maps to these categories.

Figure 22: Sample vSRX License SKU



These categories of licenses can also be combined, or stacked, to provide more flexibility for your vSRX use cases.

Throughput

Bandwidth or throughput license types allow you to use a single instance of the software for up to the maximum throughput specified in the license entitlement. Throughput can be combined on a single instance of the software so that the maximum throughput for that instance is the aggregate of all the throughput licenses assigned to that instance. A throughput license cannot be split across multiple instances. Throughput is identified in the license entitlement in megabits per second (Mbps), or gigabits per second (Gbps).

For example, if you want 3 Gbps of throughput for a vSRX instance using the STD features, you would purchase a 1G STD license and a 2G STD license and install both on the vSRX. If you wanted 2 Gbps of throughput on two vSRX instances acting as a chassis cluster, you could not use the same 2 Gbps license on both vSRX instances. You would need to purchase one set of licenses for each vSRX instance in the cluster.

License Duration

All licenses can be perpetual or subscription based.

- **Perpetual license**—A perpetual license allows you to use the licensed software indefinitely. Perpetual licenses do not require renewals. Perpetual licenses do not include maintenance and upgrade support. You must purchase that separately, vSRX software releases such as vSRX for Nutanix do not support perpetual licenses.
- **Subscription license**—A subscription license is an annual license that allows you to use the licensed software feature for the matching duration. Subscriptions might involve periodic downloads of content (such as for IDP threat signature files). Subscription licenses start when you retrieve the license key or 30 days after purchase if you have not retrieved the license key. At the end of the license period, you need to renew the license to continue using it.

All subscription licenses are renewable. To renew a subscription license, purchase a new subscription of the same license. For more information, see [Subscription - Register and Install](#).

Individual (à la carte) Feature Licenses

Every vSRX instance requires at least one standard license to support the desired throughput rate. Beyond that, you can select from a range of individual feature licenses that provide additional security feature sets. The feature license must match the standard license rate.

Individual licenses are not supported.

For example, if you need AppSecure and Sophos antivirus features at 1 Gbps of throughput for a year, you could purchase the following individual licenses:

- VSRX-STD-1G-1—Provides the standard feature set and 1 Gbps of throughput.
- VSRX-CS-1G-1—Provides the advanced features.

Bundled Licenses

Bundled licenses simplify the license management by combining one or more individual licenses into a single bundled license. Instead of installing and managing a standard throughput license and one or more individual advanced feature licenses, you can purchase one of the bundle license options and manage one license instead.

For example, if you need AppSecure and Sophos antivirus features at 1 Gbps of throughput for a year, you could purchase the single bundled VSRX-CS-B-1G-1 license, which includes the STD throughput license. This means you only need to manage one license instead of two individual licenses.

Stacking Licenses

You can combine individual or bundled licenses to combine features or build up the overall supplied throughput for the vSRX instance.

For example, you can combine a 1-Gbps license and a 2-Gbps license to have 3 Gbps of throughput for the vSRX instance. You can also combine individual licenses, such as Sophos antivirus (SAV) and Websense Enhanced Web Filtering (EWF) to get both sets of security features.

Individual licenses require an STD license with the same throughput rate.

vSRX License Keys Components

A license key consists of two parts:

- License ID—Alphanumeric string that uniquely identifies the license key. When a license is generated, it is given a license ID.
- License data—Block of binary data that defines and stores all license key objects.

For example, in the following typical license key, the string E413XXXX57 is the license ID, and the trailing block of data is the license data:

```
E413XXXX57 aaaaaa bbbbbb cccccc dddddd eeeee ffffff
          cccccc bbbbbb dddddd aaaaaa ffffff aaaaaa
          aaaaaa bbbbbb cccccc dddddd eeeee ffffff
          cccccc bbbbbb dddddd aaaaaa ffffff
```

The license data conveys the customer ID and the software serial number (Juniper Networks support reference number) to the vSRX instance.

License Management Fields Summary

The Licenses window displays a summary of licensed features that are configured on the vSRX instance and a list of licenses that are installed on the vSRX instance.

To view the license details, select **Maintain>Licenses** in the J-Web user interface. The Licenses window appears as shown in [Figure 23 on page 299](#).

Figure 23: J-Web Licenses Window Showing Installed Licenses

The screenshot shows the J-Web interface for 'vsrx2-ide-pv11 / VSRX'. The 'Maintain' tab is selected, and the 'Licenses' sub-tab is active. The left sidebar shows a navigation menu with 'Config Management', 'Software', 'Licenses' (highlighted), 'Reboot', 'Snapshot', and 'Files'. The main content area displays a 'Feature Summary' table and an 'Installed Licenses' table.

Feature Summary

Feature	Licenses Used	Licenses Installed	Licenses Needed	License Expires on
Anti Virus with Sophos Engine	0	1	0	2016-07-29
Virtual Appliance	1	1	0	2016-04-25

Installed Licenses

Buttons: Add..., Delete, Update, Update Trial, Display Keys..., Download Keys

ID	State	Version	Group	Enabled Features	Expiration
<input type="checkbox"/> E420588955	valid	4	No group information	Virtual Appliance - Virtual Appliance	count-down
<input type="checkbox"/> JUNOS606279	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine av_key_sophos_engine - Anti Virus with Sophos Engine wf_key_websense_ewf - Web Filtering EWF	date-based, 2015-02-27 - 2016-02-28 date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15
<input type="checkbox"/> JUNOS623127	valid	4	No group information	appid-sig - APPID Signature idp-sig - IDP Signature anti_spam_key_sbl - Anti-Spam	date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15
<input type="checkbox"/> JUNOS656626	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-07-29 - 2016-07-29
<input type="checkbox"/> JUNOS657049	valid	4	No group information	Virtual Appliance - Virtual Appliance	date-based, 2015-07-29 - 2016-04-25

Buttons: Add..., Delete, Update, Update Trial, Display Keys..., Download Keys

You can also view the details of a license in the CLI using the `show system license` command. The following sample shows details of an evaluation license in the CLI:

```

License usage:

              Licenses    Licenses    Licenses    Expiry
Feature name   used      installed   needed
anti_spam_key_sbl      0           1           0    2016-04-15 08:00:00 CST
idp-sig           0           1           0    2016-04-15 08:00:00 CST
appid-sig         0           1           0    2016-04-15 08:00:00 CST
av_key_sophos_engine    0           3           0    2016-07-29 08:00:00 CST
wf_key_websense_ewf     0           1           0    2016-04-15 08:00:00 CST
Virtual Appliance      1           1           0    2016-04-25 08:00:00 CST

Licenses installed:
License identifier: E420588955
License version: 4
Software Serial Number: 20150625
Customer ID: vsRX-JuniperEval
Features:

```

Virtual Appliance - Virtual Appliance
count-down, Original validity: 60 days

The information on the license management page is summarized in [Table 125 on page 300](#).

Table 125: Summary of License Management Fields

Field Name	Definition
Feature Summary	
Feature	<p>Name of the licensed feature:</p> <ul style="list-style-type: none"> • Features—Software feature licenses. • All features—All-inclusive licenses.
Licenses Used	Number of licenses currently being used on the vSRX instance. Usage is determined by the configuration. If a feature license exists and that feature is configured, the license is considered used.
Licenses Installed	Number of licenses installed on the vSRX instance for the particular feature.
Licenses Needed	Number of licenses required for legal use of the feature. Usage is determined by the configuration on the vSRX instance: If a feature is configured and the license for that feature is not installed, a license is needed.
Licenses expires on	Date the license expires.
Installed Licenses	
ID	Unique alphanumeric ID of the license.
State	<p>Valid—The installed license key is valid.</p> <p>Invalid—The installed license key is not valid.</p>

Table 125: Summary of License Management Fields *(Continued)*

Field Name	Definition
Version	Numeric version number of the license key.
Group	If the license defines a group license, this field displays the group definition. Because group licenses are currently unsupported, this field is always blank.
Enabled Features	Name of the feature that is enabled with the particular license.
Expiration	Date the license expires.
Software serial number	The serial number is a unique 14-digit number that Juniper Networks uses to identify your particular software installation. You can find the software serial number in the Software Serial Number Certificate attached to the e-mail that was sent when you ordered your Juniper Networks software or license. You can also use the <code>show system license</code> command to find the software serial number.
Customer ID	ID that identifies the registered user.

Managing Licenses for vSRX

IN THIS SECTION

- [vSRX Evaluation License Installation Process | 302](#)
- [Adding a New License Key with J-Web | 302](#)
- [Adding a New License Key from the CLI | 304](#)
- [View vSRX License Information | 305](#)
- [Updating vSRX Licenses | 305](#)
- [Deleting a License with J-Web | 306](#)
- [Deleting a License with the CLI | 307](#)
- [License Warning Messages | 308](#)

Before you begin, ensure that you have retrieved the license key from the Juniper Agile Licensing (JAL) Portal.

For more information on Juniper Agile Licensing (JAL) Portal, see [Juniper Agile Licensing \(JAL\) Portal - Frequently Asked Questions](#)

This section includes the following topics:

vSRX Evaluation License Installation Process

Juniper Networks provides a 60-day evaluation license for vSRX standard features. When you download and install the vSRX image, you are entitled to use this evaluation license for 60 days as a trial. In addition to the 60-day vSRX evaluation license, there is a 30-day advanced security features trial license for vSRX that is required for advanced security features such as UTM, IDP, and AppSecure.

You can download the 30-day advanced security feature trial license from the [vSRX Free Trial License Page](#).

There is also a 30-day trial license available for Juniper Sky Advanced Threat Prevention (ATP). This is a second license that you can apply for a 30-day period in addition to the advanced security features license for vSRX to enable the Sky ATP features. You can download the Sky ATP trial license from the [vSRX Free Trial License Page](#)

Installation of the advanced security feature trial license is similar to the regular license installation performed from the CLI (see ["Adding a New License Key from the CLI" on page 304](#)).

Within 30 days of the license expiration date, a license expiration warning appears each time you log in to the vSRX instance. After the product evaluation license expires, you will not be able to use the vSRX; it will be disabled and flow configuration options will not work (the vSRX will stop forwarding traffic). At this point, only management interfaces and CLI configurations are preserved.

The 30-day evaluation license period begins on the day you enable enhanced security features after installing evaluation licenses.

To continue using vSRX features after an optional 30-day evaluation period, you must purchase and install the license. Otherwise, the features are disabled.

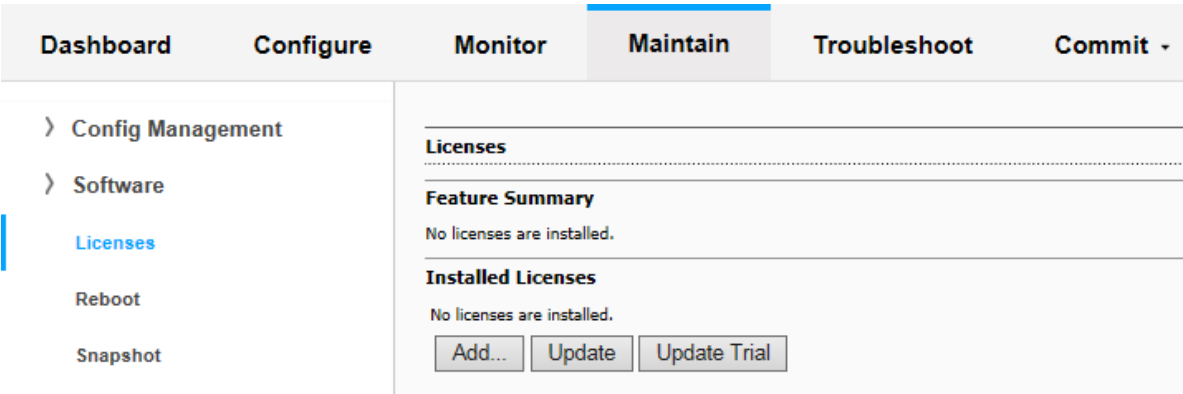
For details about the 60- and 30-day license evaluation periods for the vSRX see *vSRX Feature Licenses Overview*.

Adding a New License Key with J-Web

To install a license using the *J-Web* interface:

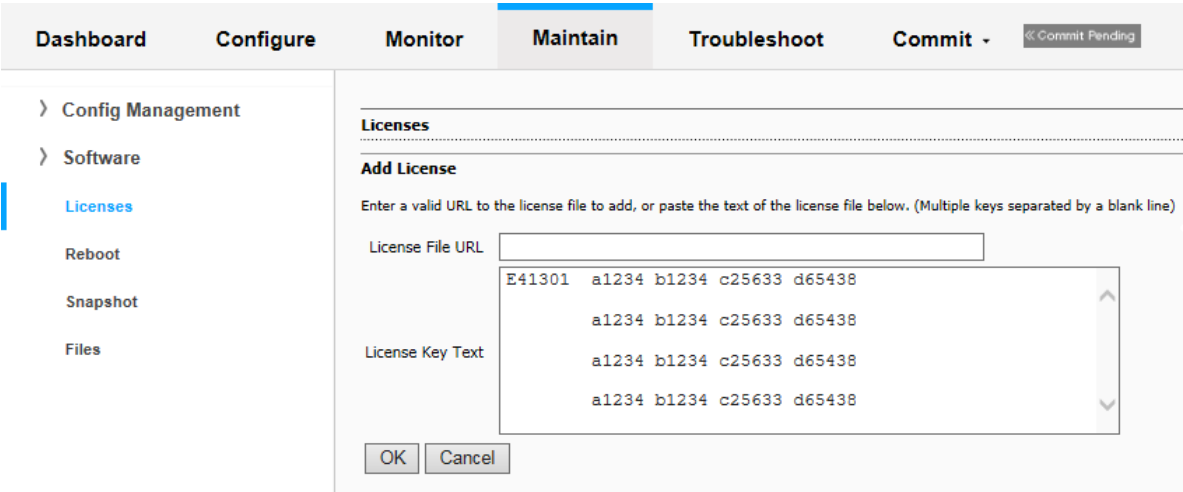
1. Select **Maintain>Licenses** on the J-Web user interface. The Licenses window is displayed as shown in [Figure 24 on page 303](#).

Figure 24: J-Web Licenses Window



2. Under Installed Licenses, click **Add**. The Add License window is displayed as shown in [Figure 25 on page 303](#).

Figure 25: Add License Window



3. Do one of the following, using a blank line to separate multiple license keys:
 - Enter the full URL to the destination file containing the license key in the License File URL box.
 - Paste the license key text, in plaintext format, in the License Key Text box.

- Click **OK** to add the license key. The License Details window is displayed as shown in [Figure 26 on page 304](#).

Figure 26: License Details Window

Dashboard

Configure

Monitor

Maintain

Troubleshoot

Commit ▾

> Config Management

> Software

Licenses

Reboot

Snapshot

Files

Licenses

Feature Summary

Feature	Licenses Used	Licenses Installed	Licenses Needed	License Expires on
Anti-Spam	0	1	0	2016-04-15
IDP Signature	0	1	0	2016-04-15
APPID Signature	0	1	0	2016-04-15
Anti Virus with Sophos Engine	0	2	0	2016-07-29
Web Filtering EWF	0	1	0	2016-04-15
Virtual Appliance	1	1	0	2016-04-25

The license key is installed and activated on the vSRX instance.

Adding a New License Key from the CLI

You can add a license key from a local file, from a remote URL, or from the terminal.

To install a license from the CLI:

- Use the `request system license add operational mode` command to either add the license from a local file or remote URL that contains the license key, or to manually paste the license key in the terminal.

```
user@vsrx> request system license add terminal
```

```
[Type ^D at a new line to end input,
enter blank line between each license key]
```

```
E413XXX57  aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
           cccccc bbbbbb dddddd aaaaaa ffffff aaaaaa
           aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
           cccccc bbbbbb dddddd aaaaaa ffffff
```

```
E413XXX57: successfully added
add license complete (no errors)
```

You can save the license key to a file and upload the file to the vSRX file system through FTP or Secure Copy (SCP), and then use the `request system license add file-name` command to install the license.

2. Optionally, use the `show system license` command to view details of the licenses.

```
root@host> show system license
```

License usage:	Licenses	Licenses	Licenses
Expiry			
Feature name	used	installed	needed
wf key websense ewf	1	0	1
invalid			
Licenses installed: none			

The license key is installed and activated on the vSRX instance.

View vSRX License Information

You can view the vSRX license information using either of the following two methods:

- [Serial Number Entitlement](#)
- [Juniper Agile Licensing Portal](#)

To view the vSRX licenses information using [Serial Number Entitlement](#):

1. Navigate to the [Serial Number Entitlement](#).
2. Enter the *Serial Number* or *Software Support Reference Number* or *Contract ID* in the data input field.
3. Click **View Entitlement Information** to see the vSRX license information for the given *Serial Number* or *Software Support Reference Number* or *Contract ID*.

To view the vSRX licenses information using [Juniper Agile Licensing Portal](#)

1. Log in to the [Juniper Agile Licensing Portal](#).
2. Navigate to **My Entitlements** section to see the vSRX license information.

Updating vSRX Licenses

You can update the vSRX licenses using either of the following two methods:

- Automatic license update using the CLI

- Manual license update using the CLI

As a prerequisite, you must install at least one valid license key on your vSRX instance for required features. Automatic license updates as well as manual license updates are performed based on a valid software serial number and customer ID embedded in the license key.

To enable automatic license updates from the CLI:

1. Contact your account team or Juniper Networks Customer Care to extend the validity period of existing license keys and obtain the URL for a valid update server.
2. Once you have successfully extended your license key and received the update server URL, configure the auto-update parameter:

```
user@host# set system license autoupdate url https://ae1.juniper.net/
```

3. Configure renew options (if required). The following sample allows vSRX to contact the license server 30 days before the current license expires and sends an automatic update request every 6 hours.

```
user@host> set system license renew before-expiration 30
user@host> set system license renew interval 6
```

To manually update the licenses from the CLI:

1. Use the following command to update the license keys manually:

```
user@host> request system license update <url.of.license.server>
```

This command sends a license update request to the license server immediately.

The request system license update command will always use the default Juniper license server: <https://ae1.juniper.net>

2. Check the status of the license by entering the show system license command.

Deleting a License with J-Web

To delete a license using the J-Web interface:

1. Select **Maintain>Licenses**.

2. Select the check box of the license or licenses you want to delete as shown in [Figure 27 on page 307](#).

Figure 27: Deleting a License

Licenses

Feature Summary

Feature	Licenses Used	Licenses Installed	Licenses Needed	License Expires on
Anti-Spam	0	1	0	2016-04-15
IDP Signature	0	1	0	2016-04-15
APPID Signature	0	1	0	2016-04-15
Anti Virus with Sophos Engine	0	2	0	2016-07-29
Web Filtering EWF	0	1	0	2016-04-15
Virtual Appliance	1	1	0	2016-04-25

Installed Licenses

ID	State	Version	Group	Enabled Features	Expiration
<input checked="" type="checkbox"/> E420588955	valid	4	No group information	Virtual Appliance - Virtual Appliance	count-down
<input type="checkbox"/> JUN05606279	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-02-27 - 2016-02-28
<input type="checkbox"/> JUN05623127	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine wf_key_websense_ewf - Web Filtering EWF appid-sig - APPID Signature idp-sig - IDP Signature anti_spam_key_sbl - Anti-Spam	date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15 date-based, 2015-04-15 - 2016-04-15
<input type="checkbox"/> JUN05656626	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-07-29 - 2016-07-29
<input type="checkbox"/> JUN05657049	valid	4	No group information	Virtual Appliance - Virtual Appliance	date-based, 2015-07-29 - 2016-04-25

3. Click **Delete**.
4. Click **OK** to confirm your deletion as shown in [Figure 28 on page 307](#).

Figure 28: Delete Licenses Window

Licenses

Delete Licenses

Are you sure you want to delete the following licenses?

ID	State	Version	Group	Enabled Features	Expiration
JUN05606279	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-02-27 - 2016-02-28

The license you deleted is removed.

Deleting a License with the CLI

To delete a license using the CLI:

1. From operational mode, for each license, enter the following command and specify the license ID. You can delete only one license at a time.

```
user@host> request system license delete <license-key-identifier>
```

Or you can use the following command to delete all installed licenses.

```
user@host> request system license delete all
```

2. Type yes when you are prompted to confirm the deletion.

```
Delete license JUNOS606279 ? [yes,no] (no)
```

The license you deleted is removed.

License Warning Messages

You must purchase a new license or renew your existing subscription-based license to have a seamless transition from the old license to the new one.

The following conditions occur when a license expires on vSRX:

- Evaluation license for the core expires—Packet forwarding on vSRX is disabled. However, you can manage vSRX through the fxp0 management interface, and the CLI configuration is preserved.
- Subscription-based licenses for advanced security features expire but subscription-based licenses for core services are active—A 30-day grace period begins, allowing the user to continue using advanced security features. After the grace period, advanced security features are disabled. Basic features are always available in the vSRX. After subscription-based licenses for core services expire, a warning message is displayed to notify the user, but basic features will remain preserved for the user.
- Subscription-based license for core features expires but subscription-based license for advanced security features is active—A warning message is displayed to notify the user. However, you can continue to use the basic features on the vSRX. Advanced security features are disabled when the subscription-based license for advanced security features expires, but basic features will remain preserved for the user.

All advanced and premium licenses are offered as subscriptions. Subscription licenses are available in 1 year, 3 years, or 5 years terms. After the order fulfilment, the subscription period begins after the completion of 30 days grace period.

[Table 126 on page 309](#) describes the subscription terms for purchase and number of months to use the license.

Table 126: Subscription Terms Details

Subscription Terms	Number of Months for the License
1 year	13 months
3 years	37 months
5 years	61 months

All subscription licenses are renewable. To renew a subscription license, purchase a new subscription of the same license. For more information, see [Subscription - Register and Install](#).

To use features that require a license, you must install and configure a license. After the license expires, warning messages are displayed in the system log and on the J-Web dashboard.

When a license expires, the System Alarms section of the J-Web dashboard displays a message stating that the license has expired as shown in [Figure 29 on page 309](#).

Figure 29: J-Web Dashboard for License Expiry Warning

System Alarms			
Received At	Severity	Description	Action
2016-03-28 08:00:51 CST	Minor	License for feature Virtual Appliance...	
2016-03-04 23:49:13 CST	Minor	Rescue configuration is not set	Set rescue c...

When a license expires, the following message appears when you log in:

Virtual Appliance License is invalid

vSRX License Model Numbers

The licenses used by all Juniper Networks instances are based on SKUs, which represent lists of features. Each license includes a list of features that the license enables along with information about those features.

For information about purchasing software licenses, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

vSRX licenses are based on application packages and processing capacity.

vSRX provides bandwidth in the following capacities (throughput per instance): 1 Gbps, 2 Gbps, and 4 Gbps. Each of these bandwidth tiers is offered with three different packages.

Table 127 on page 310 describes the features available with the various license packages.

Table 127: vSRX Licensing Package Types

License Type	Description	License Model Number
STD	<p>Includes the following features:</p> <ul style="list-style-type: none"> • Core security—firewall, ALG, screens, user firewall • IPsec VPN (site-to-site VPN) • NAT • CoS • Routing services—BGP, OSPF, DHCP, J-Flow, IPv4 • Foundation—Static routing, management (J-Web, CLI, and NETCONF), on-box logging, diagnostics 	<p>These Standard (STD) bandwidth SKUs are available for vSRX:</p> <ul style="list-style-type: none"> • VSRX-1G-STD-CLD-1: 1-Gbps throughput (1-year subscription) • VSRX-1G-STD-CLD-3: 1-Gbps throughput (3-year subscription) • VSRX-2G-STD-CLD-1: 2-Gbps throughput (1-year subscription) • VSRX-2G-STD-CLD-3: 2-Gbps throughput (3-year subscription) • VSRX-4G-STD-CLD-1: 4-Gbps throughput (1-year subscription) • VSRX-4G-STD-CLD-3: 4-Gbps throughput (3-year subscription)

Table 127: vSRX Licensing Package Types *(Continued)*

License Type	Description	License Model Number
ASCB	<p>Includes all STD features bundled with IPS and Appsecure signatures, along with the following features:</p> <ul style="list-style-type: none"> • AppID • AppFW • AppQoS • AppTrack 	<p>These AppSecurity Bundled (ASB) bandwidth SKUs are available for vSRX:</p> <ul style="list-style-type: none"> • VSRX-1G-ASB-CLD-1: 1-Gbps throughput (1-year subscription) • VSRX-1G-ASB-CLD-3: 1-Gbps throughput (3-year subscription) • VSRX-2G-ASB-CLD-1: 2-Gbps throughput (1-year subscription) • VSRX-2G-ASB-CLD-3: 2-Gbps throughput (3-year subscription) • VSRX-4G-ASB-CLD-1: 4-Gbps throughput (1-year subscription) • VSRX-4G-ASB-CLD-3: 4-Gbps throughput (3-year subscription)

Table 127: vSRX Licensing Package Types *(Continued)*

License Type	Description	License Model Number
CSB	<p>Includes all STD features, along with the features bundled with ASCB, including the addition of the following UTM features:</p> <ul style="list-style-type: none"> • Antivirus • Content filtering • Web filtering 	<p>These Content Security Bundled (CSB) bandwidth SKUs are available for vSRX:</p> <ul style="list-style-type: none"> • VSRX-1G-CSB-CLD-1: 1-Gbps throughput (1-year subscription) • VSRX-1G-CSB-CLD-3: 1-Gbps throughput (3-year subscription) • VSRX-2G-CSB-CLD-1: 2-Gbps throughput (1-year subscription) • VSRX-2G-CSB-CLD-3: 2-Gbps throughput (3-year subscription) • VSRX-4G-CSB-CLD-1: 4-Gbps throughput (1-year subscription) • VSRX-4G-CSB-CLD-3: 4-Gbps throughput (3-year subscription)
ATP-B	<p>vSRX-1G-ATP-B bundle includes:</p> <ul style="list-style-type: none"> • Juniper Sky ATP + • Content Security + • ASEC (IDP + AppFW) + • STD 	<p>A vSRX-1G-ATP-B-1 bundle includes: 1G Throughput, 1 year Subscription License for vSRX ATP package, including features in Content Security (CS) package, and Juniper SkyATP.</p>

License stacking is allowed. So, for example, to license 3 Gbps of throughput for the standard (STD) feature set for 1 year, use a VSRX-1G-STD-CLD-1 license and a VSRX-2G-STD-CLD-1.

vSRX License Model Numbers for Contrail, KVM, Microsoft Hyper-V, and VMware

The licenses used by all Juniper Networks instances are based on SKUs, which represent lists of features. Each license includes a list of features that the license enables along with information about those features.

For information about purchasing software licenses, contact your Juniper Networks sales representative at <https://www.juniper.net/in/en/contact-us/>.

vSRX licenses are based on application packages and processing capacity.

Bandwidth (throughput) licenses allow you to use a single instance of the software for up to the maximum throughput specified in the license entitlement. Throughput licenses can be combined on a single instance of the software so that the maximum throughput for that instance is the aggregate of all the throughput licenses assigned to that instance. A throughput license cannot be split across multiple instances. Throughput licenses are identified in the license entitlement in megabits per second (Mbps), or gigabits per second (Gbps).

vSRX provides bandwidth in the following capacities (throughput per instance): 100 Mbps, 1 Gbps, 2 Gbps, 4 Gbps, 10 Gbps, and 20 Gbps. Each of these bandwidth tiers is offered with four different packages along with bandwidth based, a la carte, advanced Layer 7 security services SKUs.

[Table 128 on page 314](#) describes the features available with the various license packages.

Table 128: vSRX Licensing Package Types

License Type	Description	Duration
STD	<p>Includes the following features:</p> <ul style="list-style-type: none"> • Core security – firewall, ALG, screens, user firewall • IPsec VPN (site-to-site VPN) • NAT • CoS • Multicast services – IP Multicast (PIM, IGMP) • Routing services – BGP, OSPF, DHCP, J-Flow, IPv4, and IPv6 • High availability • Foundation – Static routing, management (J-Web, CLI, and NETCONF), on-box logging, diagnostics • Software platform – KVM, Openstack, ESXi 6.0, Contrail 	<p>Both perpetual and subscription license options are available.</p> <p>See Table 129 on page 316 for STD bandwidth SKUs available for vSRX.</p>
ASCB and ASECB	<p>Includes all STD features bundled with the following additional AppSecure features:</p> <ul style="list-style-type: none"> • AppID • AppFW • AppQoS • AppTrack 	<p>Subscription licenses only.</p> <p>See Table 130 on page 317 for bandwidth SKUs available for vSRX with AppSecure and IPS features.</p>

Table 128: vSRX Licensing Package Types *(Continued)*

License Type	Description	Duration
CS-B	Includes all STD features bundled with ASEC features and the addition of UTM capabilities: <ul style="list-style-type: none"> • Antispam • Antivirus • Content filtering • Web filtering 	Subscription licenses only. See Table 132 on page 319 for CS-B bandwidth SKUs available for vSRX.
ATP-B	vSRX-1G-ATP-B bundle includes: <ul style="list-style-type: none"> • Sky ATP + • Content Security + • ASEC (IDP + AppFW) + • STD 	A vSRX-1G-ATP-B-1 bundle includes: 1G Throughput, 1 year Subscription License for vSRX ATP package, including features in Content Security (CS) package, and SkyATP. This license is not supported for Contrail deployments.
Individual (a la carte) Advanced Security Services (ASEC, S-AV, W-EWF, CS)	Individual (a la carte) Layer 7 security services licenses including: <ul style="list-style-type: none"> • Sophos antivirus • Websense enhanced Web filtering • AppSecure and IPS • Content Security (CS) 	Subscription licenses only. See Table 131 on page 318 for AppSecure and IPS SKUs available for vSRX. See Table 134 on page 321 for Sophos antivirus bandwidth SKUs available for vSRX. Table 135 on page 322 lists the Web filtering subscription licenses available for vSRX.

License stacking is allowed. For example, to license 3 Gbps of throughput for the standard (STD) feature set for 1 year, use a VSRX-1G-STD-1 license and a VSRX-2G-STD-1.

[Table 129 on page 316](#) lists the standard bandwidth licenses available for vSRX.

Table 129: Standard (STD) vSRX Bandwidth Licenses

STD Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX standard package (1 year, 3 years, and perpetual)	VSRX-100M-STD
	VSRX-100M-STD-1
	VSRX-100M-STD-3
	VSRX-1G-STD
	VSRX-1G-STD-1
	VSRX-1G-STD-3
	VSRX-2G-STD
	VSRX-2G-STD-1
	VSRX-2G-STD-3
	VSRX-4G-STD
	VSRX-4G-STD-1
	VSRX-4G-STD-3
	VSRX-10G-STD
	VSRX-10G-STD-1
	VSRX-10G-STD-3
	VSRX-20G-STD
	VSRX-20G-STD-1
	VSRX-20G-STD-3

Table 130 on page 317 lists the bandwidth licenses available for vSRX bundled with AppSecure and IPS features.

Table 130: vSRX AppSecure and IPS Bundled (ASCB and ASECB) Bandwidth Licenses

ASCB / ASECB Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX AppSecure package includes all features in the STD package with IPS and AppSecure (1-year or 3-year subscription)	VSRX-100M-ASCB-1
	VSRX-100M-ASCB-3
	VSRX-1G-ASECB-1
	VSRX-1G-ASECB-3
	VSRX-2G-ASECB-1
	VSRX-2G-ASECB-3
	VSRX-4G-ASECB-1
	VSRX-4G-ASECB-3
	VSRX-10G-ASECB-1
	VSRX-10G-ASECB-3
	VSRX-20G-ASECB-1
	VSRX-20G-ASECB-3

Table 131 on page 318 lists the individual (a la cart) subscription licenses available for vSRX with AppSecure and IPS features.

Table 131: Individual vSRX AppSecure and IPS Subscription Licenses

ASEC Licenses	Model Number
100M/1G/2G/4G/10G/20G subscription—vSRX AppSecure package includes IPS and AppSecure (1-year or 3- year subscription)	VSRX-100M-ASEC-1
	VSRX-100M-ASEC-3
	VSRX-1G-ASEC-1
	VSRX-1G-ASEC-3
	VSRX-2G-ASEC-1
	VSRX-2G-ASEC-3
	VSRX-4G-ASEC-1
	VSRX-4G-ASEC-3
	VSRX-10G-ASEC-1
	VSRX-10G-ASEC-3
	VSRX-20G-ASEC-1
	VSRX-20G-ASEC-3

[Table 132 on page 319](#) lists the Content Security Bundled (CSB) bandwidth licenses available for vSRX.

Table 132: vSRX Content Security Bundled (CSB) Bandwidth Licenses

CS Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX CS package includes all features in STD, IPS, and AppSecure, enhanced Web filtering, Sophos antivirus, antispam, content filtering, (1-year or 3-year subscription).	VSRX-100M-CS-B-1
	VSRX-100M-CS-B-3
	VSRX-1G-CS-B-1
	VSRX-1G-CS-B-3
	VSRX-2G-CS-B-1
	VSRX-2G-CS-B-3
	VSRX-4G-CS-B-1
	VSRX-4G-CS-B-3
	VSRX-10G-CS-B-1
	VSRX-10G-CS-B-3
	VSRX-20G-CS-B-1
	VSRX-20G-CS-B-3

Table 133 on page 320 lists the individual (a la carte) CS subscription licenses available for vSRX.

Table 133: vSRX Individual Content Security (CS) Subscription Licenses

CS Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX CS package includes enhanced Web filtering, Sophos antivirus, antispam, AppSecure and IPS (1-year or 3-year subscription).	VSRX-100M-CS-1
	VSRX-100M-CS-3
	VSRX-1G-CS-1
	VSRX-1G-CS-3
	VSRX-2G-CS-1
	VSRX-2G-CS-3
	VSRX-4G-CS-1
	VSRX-4G-CS-3
	VSRX-10G-CS-1
	VSRX-10G-CS-3
	VSRX-20G-CS-1
	VSRX-20G-CS-3

[Table 134 on page 321](#) lists the individual (a la carte) Sophos antivirus (S-AV) bandwidth licenses available for vSRX.

Table 134: vSRX Individual Sophos Antivirus (S-AV) Bandwidth Licenses

S-AV Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX S-AV license (1-year or 3-year subscription).	VSRX-100M-S-AV-1
	VSRX-100M-S-AV-3
	VSRX-1G-S-AV-1
	VSRX-1G-S-AV-3
	VSRX-2G-S-AV-1
	VSRX-2G-S-AV-3
	VSRX-4G-S-AV-1
	VSRX-4G-S-AV-3
	VSRX-10G-S-AV-1
	VSRX-10G-S-AV-3
	VSRX-20G-S-AV-1
	VSRX-20G-S-AV-3

[Table 135 on page 322](#) lists the individual (a la carte) enhanced Web filtering (W-EWF) subscription licenses available for vSRX.

Table 135: vSRX Individual Enhanced Web Filtering (W-EWF) Bandwidth Licenses

W-EWF Licenses	Model Number
100M/1G/2G/4G/10G/20G throughput —vSRX W-EWF license (1-year or 3 year subscription).	VSRX-100M-WEWF-1
	VSRX-100M-WEWF-3
	VSRX-1G-W-EWF-1
	VSRX-1G-W-EWF-3
	VSRX-2G-W-EWF-1
	VSRX-2G-W-EWF-3
	VSRX-4G-W-EWF-1
	VSRX-4G-W-EWF-3
	VSRX-10G-W-EWF-1
	VSRX-10G-W-EWF-3
	VSRX-20G-W-EWF-1
	VSRX-20G-W-EWF-3

[Table 136 on page 322](#) lists the remote access licenses you can purchase for vSRX.

Table 136: vSRX Remote Access Licenses

Remote Access Licenses	Model Number
Remote Access (5 Concurrent users, NCP)	vSRX-RA1-5

Table 136: vSRX Remote Access Licenses *(Continued)*

Remote Access Licenses	Model Number
Remote Access (10 Concurrent users, NCP)	vSRX-RA1-10
Remote Access (25 Concurrent users, NCP)	vSRX-RA1-25
Remote Access (50 Concurrent users, NCP)	vSRX-RA1-50
Remote Access (100 Concurrent users, NCP)	vSRX-RA1-100
Remote Access (150 Concurrent users, NCP)	vSRX-RA1-150
Remote Access (250 Concurrent users, NCP)	vSRX-RA1-250
Remote Access (500 Concurrent users, NCP)	vSRX-RA1-500

Licenses for Advanced Threat Prevention

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- [Licenses for Juniper Advanced Threat Prevention Cloud\(ATP Cloud\) | 327](#)

Licenses for JATP Advanced Threat Prevention Appliance

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- [Licensing and Platform Support information | 324](#)

- [Setting the Juniper ATP Appliance License Key | 326](#)

Licensing and Platform Support information

IN THIS SECTION

- [JATP and SRX Series Integration Licensing | 324](#)
- [Supported SRX Series Devices | 324](#)

The following sections provide information on licensing requirements and SRX Series device platform support.

JATP and SRX Series Integration Licensing

Unlike other Layer 7 features, there is no separate license required on the SRX Series device for integration with JATP. In this deployment, the JATP Core is the licensed component. If the Core has a valid license, then the SRX Series device can connect to the Core and enroll successfully. If not, the enrollment will fail.

For JATP license upload instructions, see [Setting the Juniper ATP Appliance License Key](#).

NOTE: AppSecure functionality on the SRX Series device is a pre-requisite for integrating with JATP. Depending on the SRX Series platform, a separate license may be required to enable AppSecure. Please consult the SRX Series platform data sheet for the most accurate information.

Supported SRX Series Devices

This section describes the hardware and software components that are compatible with JATP.

Platform	Hardware Requirements	Software Versions
vSRX Series		Junos 18.2R1 and above

(Continued)

Platform	Hardware Requirements	Software Versions
SRX Series	SRX320, SRX300	Junos 18.3R1 and above
SRX Series	SRX4100, SRX4200, SRX4600	Junos 15.1X49-D65 and above for SRX4100 and SRX4200 Junos 17.4R1-S1 and above for SRX4600
SRX Series	SRX340, SRX345, SRX550m	Junos 15.1X49-D60 and above
SRX Series	SRX5800, SRX5600, SRX5400	Junos 15.1X49-D50 and above
SRX Series	SRX1500	Junos 15.1X49-D33 and above

The following devices support scanning SMTP e-mail attachments:

- SRX300 Series device
- SRX320 Series device
- SRX340 Series device
- SRX345 Series device
- SRX1500 Series device
- SRX4100 Series device
- SRX4200 Series device
- SRX4600 Series device
- SRX5400 Series device
- SRX5600 Series device
- SRX5800 Series device
- vSRX Series

The following devices support scanning IMAP e-mail attachments:

- SRX300 Series device
- SRX320 Series device
- SRX340 Series device
- SRX345 Series device
- SRX1500 Series device
- SRX4100 Series device
- SRX4200 Series device
- SRX4600 Series device
- SRX5400 Series device
- SRX5600 Series device
- SRX5800 Series device
- vSRX Series

SEE ALSO

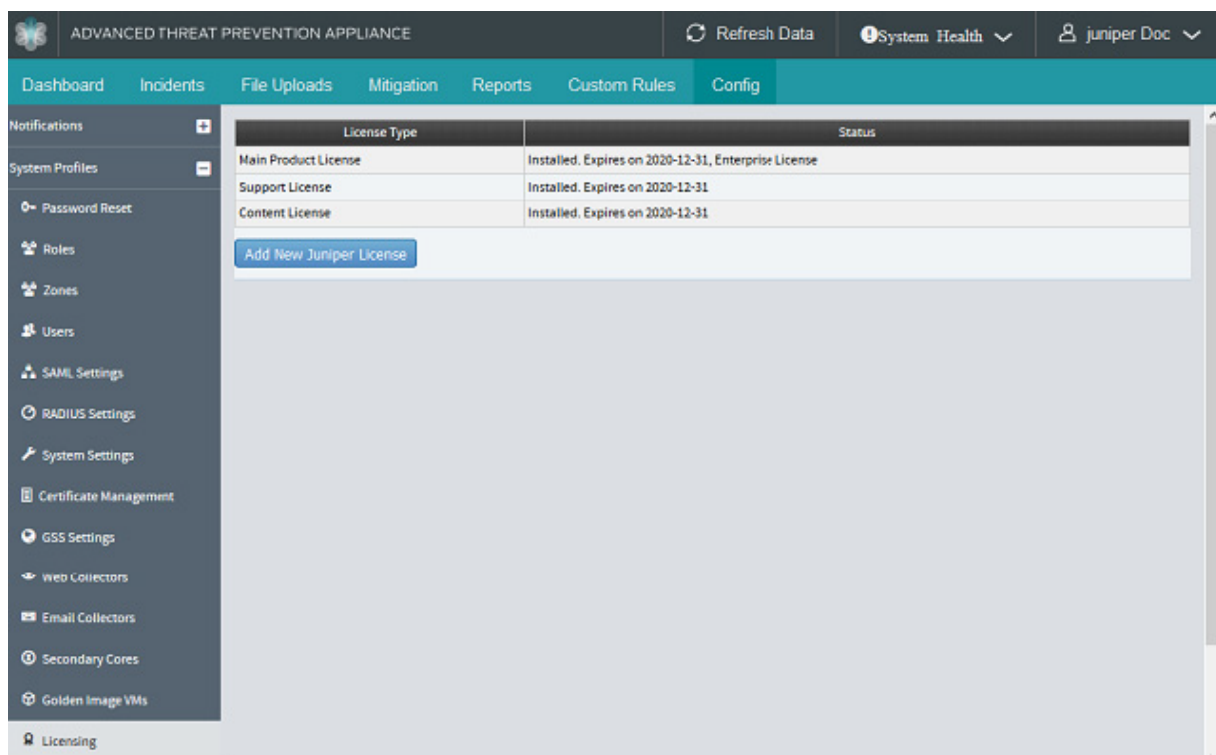
| *Getting Started with JATP and the SRX Series Device*

Setting the Juniper ATP Appliance License Key

Without a valid product license key, the Juniper ATP Appliance system will not work. Likewise, an expired product key, or an expired support or content license, prevents full operations and disables content or software updates.

Use the Config>System Profiles>Licensing configuration window to upload a License key to the Juniper ATP Appliance or software service. To license your system, you will need to upload the license using this configuration window and also use the CLI to get the system UUID.

NOTE: License Keys are obtained from Juniper Customer Support.



To upload a product license key:

1. Navigate to the Config>System Profiles>Licensing page.
2. Click Add New Juniper ATP Appliance License button to upload a new license key file.
3. Click the Choose File button to select the license key for upload, then click Submit to apply the configuration.

NOTE: A GSS connection is required in order for Juniper ATP Appliance to run regular licensing checks. Adding a license manually does not enable JATPsupport.

Licenses for Juniper Advanced Threat Prevention Cloud(ATP Cloud)

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- [Juniper Advanced Threat Prevention Cloud License Types | 328](#)
- [Managing the Juniper Advanced Threat Prevention Cloud License | 330](#)
- [Troubleshooting Juniper Advanced Threat Prevention Cloud: Checking the application-identification License | 334](#)

Juniper Advanced Threat Prevention Cloud License Types

IN THIS SECTION

- [Additional License Requirements](#) | 330

Juniper ATP Cloud has three service levels:

- Free—The free model solution is available on all supported SRX Series devices (see the [Supported Platforms Guide](#)) and for customers that have a valid support contract, but only scans executable file types (see [Juniper Advanced Threat Prevention Cloud Profile Overview](#)). Based on this result, the SRX Series device can allow the traffic or perform inline blocking.
- Basic (feed only)—Includes executable file scanning and adds filtering using the following threat feed types: Command and Control, GeoIP, Custom Filtering, and Threat Intel feeds. Threat Intel feeds use APIs that allow you to injects feeds into Juniper ATP Cloud.
- Premium—Includes all features provided in the Free and Basic licenses, but provides deeper analysis. All supported file types are scanned and examined using several analysis techniques to give better coverage. Full reporting provides details about the threats found on your network.

NOTE: On the Enrolled Devices page in the Juniper ATP Cloud Web UI, the License Expiration column contains the status of your current license, including expiration information. There is a 60 day grace period after the license expires before the SRX Series device is disenrolled from Juniper ATP Cloud. On the SRX Series device, you can run the `> show system license` command to view license details.

NOTE: You do not need to download any additional software to run Juniper ATP Cloud.

[Table 137 on page 329](#) shows a comparison between the free model and the premium model.

Table 137: Comparing the Juniper ATP Cloud Free Model, Basic-Threat Feed, and Premium Model

Free Model	Basic-Threat Feeds Model	Premium Model
Management through cloud interface. Zero on-premise footprint beyond the SRX Series device.	Management through cloud interface. Zero on-premise footprint beyond the SRX Series device.	Management through cloud interface. Zero on-premise footprint beyond the SRX Series device.
Inbound protection.	Inbound protection.	Inbound protection.
Outbound protection.	Outbound protection.	Outbound protection.
—	C&C feeds.	C&C feeds.
—	GeoIP filtering.	GeoIP filtering.
	Custom feeds	Custom feeds
		Infected host feed/endpoint quarantine
	Threat Intelligence APIs only	All APIs including File/Hash
—	—	C&C protection with event data returned to the Juniper ATP Cloud.
—	—	Compromised endpoint dashboard.
Inspects only executable file types. Executables go through the entire pipeline (cache, antivirus, static and dynamic).	Inspects only executable file types. Executables go through the entire pipeline (cache, antivirus, static and dynamic).	No restrictions on object file types inspected beyond those imposed by the Juniper ATP Cloud service. You can specify which file types are sent to service for inspection.

Table 137: Comparing the Juniper ATP Cloud Free Model, Basic-Threat Feed, and Premium Model
(Continued)

Free Model	Basic-Threat Feeds Model	Premium Model
Reporting with rich detail on malware behaviors.	Reporting with rich detail on malware behaviors.	Reporting with rich detail on malware behaviors.

For more information on analysis techniques, see [How is Malware Analyzed and Detected?](#). For additional information on product options, see the [Juniper ATP datasheet](#).

For more information on this and premium license SKUs, contact your local sales representative.

Additional License Requirements

AppSecure functionality on the SRX Series device is a pre-requisite for the Juniper Advanced Threat Prevention Cloud feature. Depending on the SRX Series platform, a separate license may be required to enable AppSecure. Please consult the SRX Series platform datasheet for the most accurate information.

Managing the Juniper Advanced Threat Prevention Cloud License

IN THIS SECTION

- [Obtaining the Premium License Key | 331](#)
- [License Management and SRX Series Devices | 331](#)
- [Juniper ATP Cloud Premium Evaluation License for vSRX | 332](#)
- [License Management and vSRX Deployments | 332](#)
- [High Availability | 333](#)

This topic describes how to install the Juniper ATP Cloud premium license onto your SRX Series devices and vSRX deployments. You do not need to install the Juniper ATP Cloud free license as these are included your base software. Note that the free license has a limited feature set (see [Juniper Advanced Threat Prevention Cloud License Types](#) and [File Scanning Limits](#)).

When installing the license key, you must use the license that is specific your device type. For example, the Juniper ATP Cloud premium license available for the SRX Series device cannot be used on vSRX deployments.

Obtaining the Premium License Key

The Juniper ATP Cloud premium license can be found on the Juniper Networks product price list. The procedure for obtaining the premium license entitlement is the same as for all other Juniper Network products. The following steps provide an overview.

1. Contact your local sales office or Juniper Networks partner to place an order for the Juniper ATP Cloud premium license.

After your order is complete, an authorization code is e-mailed to you. An authorization code is a unique 16-digit alphanumeric used in conjunction with your device serial number to generate a premium license entitlement.

2. (SRX Series devices only) Use the `show chassis hardware` CLI command to find the serial number of the SRX Series devices that are to be tied to the Juniper ATP Cloud premium license.

```
[edit]
root@SRX# run show chassis hardware
Hardware inventory:
Item            Version  Part number  Serial number  Description
Chassis                               CM1915AK0326  SRX1500
Midplane        REV 09   750-058562  ACMH1590      SRX1500
Pseudo CB 0
Routing Engine 0          BUILTIN    BUILTIN      SRX Routing Engine
FPC 0                REV 08   711-053832  ACMG3280      FEB
PIC 0                BUILTIN    BUILTIN      12x1G-T-4x1G-SFP-4x10G
```

Look for the serial number associated with the chassis item. In the above example, the serial number is CM1915AK0326.

3. Open a browser window and go to <https://license.juniper.net>.
4. Click **Login to Generate License Keys** and follow the instructions.

NOTE: You must have a valid Juniper Networks Customer Support Center (CSC) account to log in.

License Management and SRX Series Devices

Unlike other Juniper Networks products, Juniper ATP Cloud does not require you to install a license key onto your SRX Series device. Instead, your entitlement for a specific serial number is automatically transferred to the cloud server when you generate your license key. It may take up to 24 hours for your activation to be updated in the Juniper ATP Cloud cloud server.

Juniper ATP Cloud Premium Evaluation License for vSRX

The 30-day Juniper ATP Cloud countdown premium evaluation license allows you to protect your network from advanced threats with Juniper ATP Cloud. The license allows you to use Juniper ATP Cloud premium features for 30-days without having to install a license key. After the trial license expires, the connection to the Juniper ATP Cloud cloud is broken and you will no longer be able to use any Juniper ATP Cloud features.

Instructions for downloading the trial license are here: <https://www.juniper.net/us/en/dm/free-vsrx-trial/>.

NOTE: The 30-day trial license period begins on the day you install the evaluation license. To continue using Juniper ATP Cloud features after the optional 30-day period, you must purchase and install the date-based license; otherwise, the features are disabled.

After installing your trial license, set up your realm and contact information before using Juniper ATP Cloud. For more information, see [Registering a Juniper Advanced Threat Prevention Cloud Account](#).

License Management and vSRX Deployments

Unlike with physical SRX Series devices, you must install Juniper ATP Cloud premium licenses onto your vSRX. Installing the Juniper ATP Cloud license follows the same procedure as with most standard vSRX licenses.

The following instructions describe how to install a license key from the CLI. You can also add a new license key with J-Web (see [Managing Licenses for vSRX](#).)

NOTE: If you are reinstalling a Juniper ATP Cloud license key on your vSRX, you must first remove the existing Juniper ATP Cloud license. For information on removing licenses on the vSRX, see [Managing Licenses for vSRX](#).

To install a license key from the CLI:

1. Use the `request system license add` command to manually paste the license key in the terminal.

```
user@vsrx> request system license add terminal
```

```
[Type ^D at a new line to end input,  
enter blank line between each license key]
```

```
JUNOS123456  aaaaaa bbbbbb cccccc dddddd eeeeee ffffff  
             cccccc bbbbbb dddddd aaaaaa ffffff aaaaaa
```

```
aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
cccccc bbbbbb dddddd aaaaaa ffffff
```

```
JUNOS123456: successfully added
add license complete (no errors)
```

NOTE: You can save the license key to a file and upload the file to the vSRX file system through FTP or Secure Copy (SCP), and then use the request system license add *file-name* command to install the license.

2. (Optional) Use the show system license command to view details of the licenses.

Example of a premium license output:

```
root@host> show system license

License identifier: JUNOS123456
License version: 4
Software Serial Number: 1234567890
Customer ID: JuniperTest
Features:
  Sky ATP          - Sky ATP: Cloud Based Advanced Threat Prevention on SRX firewalls
                    date-based, 2016-07-19 17:00:00 PDT - 2016-07-30 17:00:00 PDT
```

Example of a free license output:

```
root@host> show system license

License identifier: JUNOS123456
License version: 4
Software Serial Number: 1234567890
Customer ID: JuniperTest
Features:
  Virtual Appliance - Virtual Appliance permanent
```

3. The license key is installed and activated on your vSRX.

High Availability

Before enrolling your devices with the Juniper ATP Cloud cloud, set up your HA cluster as described in your product documentation. For vSRX deployments, make sure the same license key is used on both

cluster nodes. When enrolling your devices, you only need to enroll one node. The Juniper ATP Cloud cloud will recognize this is an HA cluster and will automatically enroll the other node.

Troubleshooting Juniper Advanced Threat Prevention Cloud: Checking the application-identification License

If you are using an SRX1500 Series device, you must have a valid application-identification license installed. Use the `show services application-identification version` CLI command to verify the applications packages have been installed. You must have version 2540 or later installed. For example:

```
user@host> show services application-identification version
Application package version: 2540
```

If you do not see the package or the package version is incorrect, use the `request services application-identification download` CLI command to download the latest application package for Junos OS application identification. For example:

```
user@host> request services application-identification download
Please use command "request services application-identification download status" to check status
```

Then use the `request services application-identification install` CLI command to install the downloaded application signature package.

```
user@host> request services application-identification install
Please use command "request services application-identification install status" to check status
```

Use the `show services application-identification application version` CLI command again to verify the applications packages is installed.

CHAPTER 10

Licenses for Network Management

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Licenses for Network Management

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Licenses for Junos Space

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Viewing Licenses With Edge Services Director

Juniper Networks devices require a license to operate some features. You can view the licenses for devices connected to Edge Services Director.

To view the license for a Juniper Networks device on your network:

1. Select the **Build** icon in the Edge Services Director banner.
2. In the View pane, select a wireless or wired device.
3. In the Tasks pane, select **View License Information**.

The Licenses page for that object is displayed with the fields listed in [Table 138 on page 336](#).

Table 138: Viewing Licenses with Edge Services Director

Field	Description
Feature Name	Name of the licensed SKU or feature. It can be used to look up the license with Juniper Networks. Not all devices support this.
License Count	Number of times an item has been licensed. This value can have contributions from more than one licensed SKU or feature. Alternatively, it can be 1, no matter how many times it has been licensed.
Used Count	Number of times the feature is used. For some types of licenses, the license count will be 1, no matter how many times it is used. For capacity-based licensable items, if infringement is supported, the license count can exceed the given count, which has a corresponding effect on the need count.
Need Count	Number of times the feature is used without a license. Not all devices can provide this information.
Given Count	Number of instances of the feature that are provided by default.

If a device does not have a license, a blank page is displayed with the message, No license is installed on this device. If you are sure the device has a license, try resynchronizing the device before displaying the license again.

4. Optionally, expand the license information by feature name to view the feature SKU information. [Table 139 on page 337](#) describes the additional fields that are displayed.

Table 139: Additional Licensing Information

Field	Description
Validity Type	Validity type can be Databased (license expires on end date), Permanent, Countdown (license expires when time remaining is zero), or Trial. If the validity type is either Databased or Countdown, more information is displayed—License Name, License Version, License State, and Time Remaining. Additional information can be added in the details grid based on the SKU type (SKU or Feature)—Start Date, End Date, or Original Time Allowed.
License Name	If the validity type is either Databased or Countdown, the identifier associated with a license key is displayed.
License Version	If the validity type is either Databased or Countdown, the version of a license is displayed. The version indicates how the license is validated, the type of signature, and the signer of the license key.
License State	If the validity type is either Databased or Countdown, the state of the license is displayed—Valid, Invalid, or Expired.
Time Remaining	If the validity type is either Databased or Countdown, the remaining time left on the license is displayed. For a trial license, the number of days remaining after you installed the device is displayed. For a commercial license, the time remaining is unlimited.
Start Date	Based on the SKU type, the start date of the license can be displayed in the details grid.

Table 139: Additional Licensing Information (Continued)

Field	Description
End Date	Based on the SKU type, the end date of the license can be displayed in the details grid.
Original Time Allowed	Based on the SKU type, the original license timeframe can be displayed here.

If you apply a new license to an existing device, you must resynchronize the device before the new license is seen in Edge Services Director. For directions, see [Resynchronizing Device Configuration](#).

SEE ALSO

[Understanding the Edge Services Director User Interface](#)

Viewing Licenses With Connectivity Services Director

Juniper Networks devices require a license to operate some features. You can view the licenses for devices connected to Connectivity Services Director.

To view the license for a Juniper Networks device on your network:

1. Select the **Build** icon in the Connectivity Services Director banner.
2. In the View pane, select a device.
3. In the Tasks pane, select **View License Information**.

The Licenses page for that object is displayed with the fields listed in [Table 140 on page 338](#).

Table 140: Viewing Licenses with Connectivity Services Director

Field	Description
Feature Name	Name of the licensed SKU or feature. It can be used to look up the license with Juniper Networks. Not all devices support this.

Table 140: Viewing Licenses with Connectivity Services Director *(Continued)*

Field	Description
License Count	Number of times an item has been licensed. This value can have contributions from more than one licensed SKU or feature. Alternatively, it can be 1, no matter how many times it has been licensed.
Used Count	Number of times the feature is used. For some types of licenses, the license count will be 1, no matter how many times it is used. For capacity-based licensable items, if infringement is supported, the license count can exceed the given count, which has a corresponding effect on the need count.
Need Count	Number of times the feature is used without a license. Not all devices can provide this information.
Given Count	Number of instances of the feature that are provided by default.

If a device does not have a license, a blank page is displayed with the message, No license is installed on this device. If you are sure the device has a license, try resynchronizing the device before displaying the license again.

If you apply a new license to an existing device, you must resynchronize the device before the new license is seen in Connectivity Services Director. For directions, see [Resynchronizing Device Configuration](#).

Viewing Licenses With Network Director

Juniper Networks devices require a license to operate some features. You can view the licenses for devices connected to Network Director.

To view the license for a Juniper Networks device on your network:

1. Select the **Build** icon in the Network Director banner.
2. In the View pane, select a wireless or wired device.
3. In the Tasks pane, select **View License Information**.

The Licenses page for that object is displayed with the fields listed in [Table 141 on page 340](#).

Table 141: Viewing Licenses with Network Director

Field	Description
Feature Name	Name of the licensed SKU or feature. It can be used to look up the license with Juniper Networks. Not all devices support this.
License Count	Number of times an item has been licensed. This value can have contributions from more than one licensed SKU or feature. Alternatively, it can be 1, no matter how many times it has been licensed.
Used Count	Number of times the feature is used. For some types of licenses, the license count will be 1, no matter how many times it is used. For capacity-based licensable items, if infringement is supported, the license count can exceed the given count, which has a corresponding effect on the need count.
Need Count	Number of times the feature is used without a license. Not all devices can provide this information.
Given Count	Number of instances of the feature that are provided by default.

If a device does not have a license, a blank page is displayed with the message, No license is installed on this device. If you are sure the device has a license, try resynchronizing the device before displaying the license again.

4. Optionally, expand the license information by feature name to view the feature SKU information. [Table 142 on page 341](#) describes the additional fields that are displayed.

Table 142: Additional Licensing Information

Field	Description
Validity Type	Validity type can be Databased (license expires on end date), Permanent, Countdown (license expires when time remaining is zero), or Trial. If the validity type is either Databased or Countdown, more information is displayed—License Name, License Version, License State, and Time Remaining. Additional information can be added in the details grid based on the SKU type (SKU or Feature)—Start Date, End Date, or Original Time Allowed.
License Name	If the validity type is either Databased or Countdown, the identifier associated with a license key is displayed.
License Version	If the validity type is either Databased or Countdown, the version of a license is displayed. The version indicates how the license is validated, the type of signature, and the signer of the license key.
License State	If the validity type is either Databased or Countdown, the state of the license is displayed—Valid, Invalid, or Expired.
Time Remaining	If the validity type is either Databased or Countdown, the remaining time left on the license is displayed. For a trial license, the number of days remaining after you installed the device is displayed. For a commercial license, the time remaining is unlimited.
Start Date	Based on the SKU type, the start date of the license can be displayed in the details grid.
End Date	Based on the SKU type, the end date of the license can be displayed in the details grid.

Table 142: Additional Licensing Information (*Continued*)

Field	Description
Original Time Allowed	Based on the SKU type, the original license timeframe can be displayed here.

If you apply a new license to an existing wireless LAN controller, you must resynchronize the device before the new license is seen in Network Director. For directions, see [Resynchronizing Device Configuration](#).

Installing VCF Software Licenses

To install a VCF software license:

1. Purchase two VCF software license keys (QFX-VCF-LIC) from your [Juniper Networks sales representative](#).

The sales representative will provide you with the feature license files and license keys. You will be asked to supply the chassis serial number of your switch; you can obtain the serial number by issuing the `show virtual-chassis` command.

2. Install the first software license on one device in the VCF (for example, the device acting in the primary role):

```
user@device> request system license add (filename | url)
```

3. Install the second software license on a second device in the VCF (for example, the device acting in the backup role):

```
user@device> request system license add (filename | url)
```

Junos Space License Installation Overview

Junos Space Network Management Platform comes with a 60-day full-featured trial license. You must procure and install a valid license during this period to ensure continued operation beyond the trial period.

If you fail to upload a valid license during the 60-day trial period, the Junos Space user interface displays an error message when you log in indicating that the license has expired. Your access is limited to the Licenses page (**Administration > Licenses**) from where you can execute the **Import License** task to enter a valid license.

For Junos Space Platform licensing details, see [Generating and Uploading the Junos Space License Key File](#) and [Viewing Junos Space Licenses](#).

You can use either of the following options to install a valid license for Junos Space Platform:

- If you plan to use the Junos Space Platform with only the Support Automation applications (Service Now and Service Insight), you can navigate to the **Add Organization** page (**Service Now > Administration > Organizations > Add Organization**) in the Service Now user interface to activate these applications. However, to activate these applications, you must have a valid support contract for your Juniper Networks devices and valid credentials to access the Juniper Support System (JSS) back end.

If you choose this option and if you want to use other Junos Space applications beyond the trial period, you must purchase a license for Junos Space Platform (as explained in the bulleted item that follows).

- If you want to use Junos Space applications other than Service Now and Service Insight, or if you do not have a valid support contract for your Juniper Networks devices, you must purchase a license for Junos Space Platform. After you obtain the license file, you can install the license from the **Import License** page (**Administration > Licenses > Import License**). For more information about installing a valid license for Junos Space Platform, see the [Generating and Uploading the Junos Space License Key File](#) topic (in the *Junos Space Network Management Platform Workspaces Feature Guide*).

Exporting the License Inventory

The Device Licence Inventory feature enables you to display the currently installed license inventory information for all DMI schema-based devices under Junos Space Network Management Platform management.

The license inventory is generated when the device is first discovered and synchronized in Junos Space Network Management Platform.

The licenses used by all Juniper Networks devices are based on SKUs, which represent lists of features. Each license includes a list of features that the license enables and information about those features. Sometimes the license information also includes the inventory keys of hardware or software elements upon which the license can be installed.

To view the license(s) for Junos Space Network Management Platform itself, see [Viewing Junos Space Licenses](#).

This topic also covers:

- Absence of license
- Trial information
- Count-down information

- Date-based information

DMI enables each device family to maintain its own license catalog in the DMI Update Repository. The license catalog is a flat list of all the licenses used by a device family. The key for a license element is its SKU name. Each license element in the catalog includes a list of features that the license enables and information about each feature (that is, its name and value). Optionally, the license element can also list the inventory keys of hardware or software elements and where it can be installed.

If the license inventory on the device is changed, the result depends on whether the network is the system of record or Junos Space Network Management Platform is the system of record. See [Systems of Record in Junos Space Overview](#).

If the network is the system of record, Junos Space Network Management Platform automatically synchronizes with the managed device. You can also manually resynchronize the Junos Space Network Management Platform license database with the device by using the Resynchronize with Network action. See [Resynchronizing Managed Devices with the Network](#).

If Junos Space Network Management Platform is the system of record, neither automatic nor manual resynchronization is available.

Viewing device license inventory does not include pushing license keys to devices. You can, however, push licenses with the Configuration Editor to any device that has license keys in its configuration. You can export device license inventory information to a CSV file for use in other applications.

License inventory information shows individually installed licenses as well as a license usage summary, with statistics for various features.

To export the license inventory for a device:

1. On the Network Management Platform user interface, select **Devices > Device Management**.

The Device Management page displays the devices managed in Junos Space Network Management Platform.

2. Select **Device Inventory > View License Inventory** from the Actions menu.

The License Inventory page displays the license information listed in [Table 143 on page 345](#).

Need Counts in red indicate violations. In other words, entries in red indicate that you are using features that you are not licensed to use. You may also encounter the message that you have no licenses installed.

3. (Optional) View the list of licensed features for the selected license by double-clicking a license usage summary or clicking on the forward action icon to the left of a license usage summary.

The information displayed is described in [Table 144 on page 345](#).

4. (Optional) Click **Return to Inventory View** at the top of the inventory page.

5. (Optional) Click **Export** at the top of the inventory page, to export the license inventory information.

The Export Device License Information dialog box appears, displaying a link: Download license file for selected device (CSV format).

6. (Optional) Click the download link.

The Opening Device License-xxxxxxCSV dialog box appears, where xxxxxx represents a number.

7. Open the file with an application of your choice, or download the file by clicking **Save**.

The CSV file contains the fields described in [Table 144 on page 345](#) and [Table 145 on page 346](#).

These fields are not populated if the information is not available for the selected license.

Exporting device license information generates an audit log entry.

Table 143: License Usage Summary Fields

Field	Description
Feature name	Name of the licensed SKU or feature. It can be used to look up the license with Juniper Networks. Not all devices support this.
License count	Number of times an item has been licensed. This value may have contributions from more than one licensed SKU or feature. Alternatively, it may be 1, no matter how many times it has been licensed.
Used count	Number of times the feature is used. For some types of licenses, the license count will be 1, no matter how many times it is used. For capacity-based licensable items, if infringement is supported, the license count may exceed the given count, which has a corresponding effect on the need count.
Need count	Number of times the feature is used without a license. Not all devices can provide this information.
Given count	Number of instances of the feature that are provided by default.

Table 144: License Feature or SKU Fields

Field	Description
Feature Name	Name of the licensed SKU or feature. It can be used to look up the license with Juniper Networks. Not all devices support this.

Table 144: License Feature or SKU Fields (Continued)

Field	Description
Validity Type	The SKU or feature is considered permanent if it is not trial, count-down, or data-based.

Table 145: Additional Fields in CSV Files

Field	Description
State	Status of the license: valid, invalid, or expired. Only licenses marked as valid are considered when calculating the license count.
Version	Version of the license.
Type	Permanent, trial, and so on.
Start Date	Licensed feature starting date.
End Date	Licensed feature ending date.
Time Remaining	Licensed feature time remaining.

Juniper Connected Security for VMware NSX Licensing

IN THIS SECTION

- [Juniper Connected Security for VMware NSX Advanced Security Licenses | 347](#)
- [License Duration | 348](#)
- [License Procurement and Installation | 348](#)

VMware NSX is VMware's network virtualization platform for the Software Defined Data Center (SDDC). You can add the vSRX Virtual Services Gateway as a partner security service in the VMware NSX environment. The vSRX security service is managed by the Junos Space Security Director and VMware NSX Manager to deliver a complete and integrated virtual security solution for your SDDC environment. The vSRX provides advanced security services (Layer 7 services), including intrusion detection and prevention (IDP), and application control and visibility services through AppSecure.

The Juniper Connected Security for VMware NSX licensing includes support for Juniper's virtual firewall (vSRX), Network Security services (AppSecure, IDP) and the Juniper Connected Security and Security Management solutions (Policy Enforcer and Security Director) for VMware NSX-based private cloud advanced security.

Juniper Connected Security for VMware NSX Advanced Security Licenses

The Juniper Connected Security for NSX Advanced Security (ADS) licenses that are available from Juniper Networks provide entitlement for protection of one physical CPU socket, with one vSRX instance key provided for each license. Typically, a VMware ESXi server has multiple CPU sockets, and each CPU socket has multiple cores.

All Juniper Connected Security for NSX ADS licenses have an associated time duration; you purchase licenses as subscription based for a 1-year, 3-year, or 5-year duration.

A Juniper Connected Security for NSX ADS license cannot be purchased as a perpetual (never expire) license. Each license is only available on a subscription basis.

Each license includes support for the following:

- Juniper vSRX Series Virtual Services Gateway, including:
 - Stateful L3-L4 firewall
 - Advanced Application Security (ASEC) features (such as AppID, AppFW, AppQoS, and AppTrack)
 - Intrusion Detection and Prevention (IDP)
- Juniper Security Management solutions, including:
 - Junos Space Security Director
 - Juniper Connected Security Policy Enforcer

The licenses available in the Juniper Connected Security for VMware NSX ADS licensing model are based on SKUs which represent the terms of subscription and the supported features.

[Table 146 on page 348](#) describes the various license packages.

Table 146: Juniper Connected Security for VMware NSX ADS Licensing Packages

License Model Number	Description
JNSX-ADS-1-1Y	<p>Juniper Connected Security for NSX Advanced Security with vSRX for 1 physical CPU socket - 1 Year Subscription</p> <p>The 1 year subscription license includes support for Security Director, Policy Enforcer, 1 vSRX entitlement for 1 physical CPU socket protection with AppSecure and IDP feature support</p>
JNSX-ADS-1-3Y	<p>Juniper Connected Security for NSX Advanced Security with vSRX for 1 physical CPU socket - 3 Year Subscription</p> <p>The 3 year subscription license includes support for Security Director, Policy Enforcer, 1 vSRX entitlement for 1 physical CPU socket protection with AppSecure and IDP feature support</p>
JNSX-ADS-1-5Y	<p>Juniper Connected Security for NSX Advanced Security with vSRX for 1 physical CPU socket - 5 Year Subscription</p> <p>The 5 year subscription license includes support for Security Director, Policy Enforcer, 1 vSRX entitlement for 1 physical CPU socket protection with AppSecure and IDP feature support</p>

License Duration

The Juniper Connected Security for NSX ADS license model is subscription based. A subscription license is an annual license that allows you to use the licensed software for the matching duration. Subscriptions might involve periodic downloads of content (such as for IDP threat signature files). At the end of the license period, you need to renew the license to continue using it.

Subscription licenses start when you retrieve the license key or 30 days after purchase if you have not retrieved the license key. All subscription licenses are renewable.

License Procurement and Installation

To enable a Juniper Connected Security for NSX ADS license, you must purchase, install, and manage the license key that corresponds to the specific terms of each license. The presence of the appropriate software unlocking key on your virtual instance allows you to configure and use that license.

Licenses are usually ordered when the software application is purchased, and this information is bound to a customer ID. If you did not order the licenses when you purchased your software application, contact your account team or [Juniper Networks Customer Care](#) for assistance. Licenses can be procured from the [Juniper Networks License Management System \(LMS\)](#).

From the Junos Space Security Director you discover the NSX Manager and perform service registration of the vSRX VM with the NSX Manager. The NSX Manager is added as a device in Security Director and its inventory is synchronized with Security Director. Discovering the NSX Manager and registering vSRX as a security service in Security Director are described in detail in [Deploying the vSRX as an Advanced Security Service in a VMware NSX Environment](#).

As part of the service registration procedure, in the Service Manager Registration section of the Add NSX Manager page, you enter the license key (see [Figure 30 on page 349](#)).

Figure 30: Service Manager Registration: Entering the License Key

Add NSX Manager ⓘ

1 NSX Manager 2 Service Manager Registration 3 vCenter Server

Security Service Registration

SD Username: super

SD Password: [masked]

License Key *: JUNOS632605 jeeagc beagcf lg6g4m bzhbou3
p3nasa f636do amozh4 n4m4m3 d4b4t n4b4t4
f4b4t4m f4b4t4m n4b4t4m n4b4t4m n4b4t4m n4b4t4m

Cancel Back Next

Licenses for Network and Security Manager (NSM)

IN THIS SECTION

- [Installing Advanced License Keys | 350](#)
- [Managing License Keys \(ScreenOS Only\) | 350](#)
- [Generating the NSM License Key File | 351](#)

Installing Advanced License Keys

To access the IDP functionality on a security module, you must install both an Advanced license key and an IDP license key on the security device. For details on obtaining and installing a license key.

Installing the IDP license key disables the Deep Inspection (DI) feature.

Managing License Keys (ScreenOS Only)

IN THIS SECTION

- [Installing License Keys on a Device | 350](#)
- [Importing License Key Information into NSM | 351](#)
- [Installing Trial License Keys | 351](#)

Some security devices support the activation of optional features or the increased capacity of existing features through the installation of license keys. You must first obtain a license key from your value-added reseller (VAR) or from Juniper Networks. Then you can use the NSM UI to install the license key on the managed device.

After you have installed the license key on the device, the device can begin to use the new feature immediately. However, because the information in the license key is decoded only after it has been installed on the device, you must import the license key information from the device into the NSM system before the new feature appears in the UI. Importing license keys from the device can also resolve any license key mismatches between NSM and the managed device.

Installing License Keys on a Device

To obtain a license key:

1. Contact the value-added reseller (VAR) who sold you the security device, or contact Juniper Networks directly.
2. Provide the serial number of your device and state the feature option you want. The license key is generated and then sent to you in an e-mail message.

To install the license key on a device using the NSM UI:

1. In the main navigation tree, right-click the device on which you want to install the license key and select **Admin > Install License Key**. The Install License Key dialog box appears.

2. Either copy and paste the license key into the dialog box, or click the **Browse** button to locate the license key file on your computer.
3. Click **OK**.

Importing License Key Information into NSM

After you install a new license key on a device, either through the NSM UI or locally (through the Web UI or CLI) you must import that license key information into the NSM system.

Importing license key information from a device also enables you to quickly view all license keys installed on a device, and the features and capacities available on the device.

To import or view license key information:

1. In the main navigation tree, right-click the device on which you want to install the licence key and select **Admin > Import License Key Info**.
2. Click **Yes** at the confirmation dialog box. The Job Information window displays the license key information.

Installing Trial License Keys

A trial license key allows you to view and evaluate NSM before purchasing the subscription. You can install a trial license on NSM which allows you to add up to 6025 devices on a software installation and 525 devices on an appliance setup. You can choose trial periods of 30, 60 and 90 days.

The **Expires in (Days)** field in the **NSM License Information** window shows the status of your license. When you install a trial license, NSM displays a warning that your license expires in **X** number of days. When your license expires, NSM notifies you that your trial period is over and prompts you to install a new license. You can proceed with the NSM GUI log in only after the installation of a valid permanent license.

Generating the NSM License Key File

IN THIS SECTION

- [Installing NSM for the First Time | 352](#)
- [Upgrading to an NSM Release that Requires a License | 354](#)
- [Example of an NSM License File | 357](#)
- [Installing the License Key File in Various Configurations | 357](#)

- [Upgrading the License Key | 358](#)
- [Viewing License Key Information | 358](#)
- [Enforcing Licenses | 358](#)
- [Licensing FAQ | 358](#)

In Release 2007.3 and later releases, the NSM product line uses a licensing mechanism to prevent access to an unlicensed copy of NSM and to enforce a limit on the maximum number of devices that can be managed by NSM. New installations and installations upgrading from a release prior to 2007.3 must obtain a license to use NSM.

The base license supports 25 devices with high availability (HA), including devices running ScreenOS, IDP, or Junos OS with Enhanced Services; EX Series, Secure Access, or Infranet Controller devices; and including any modeled or vsys devices. For details on these devices, see the *Network and Security Manager Administration Guide*.

To manage more than 25 devices, a license key must be purchased separately, retrieved from the Juniper License Management Server (LMS), and then installed onto the NSM Server or NSM appliance.

LMS provides an interface to generate licenses based upon serial number, authorization code and installation ID.

Procedures provided in the following sections use the NSM installer to generate the installation ID. Alternatively, you can download a utility from the [Juniper Networks Software Download site](#) for generating the installation ID.

Installing NSM for the First Time

The first time you install NSM 2007.3 or later release software only, you need to generate a license key file that requires an installation ID.

NSM Trial Licenses

You can generate a trial license for NSM for periods of 30, 60 or 90 days. The **NSM License Information** dialog box displays the validity period in the **Expires in (Days)** field. Licenses can only be installed or updated from the NSM GUI. When the trial period is over, NSM notifies you and prompts you to install a new license. If you install the new license, you can proceed to log in to NSM. If not, you must exit from the GUI.

Generating the License Key for an NSM Software-Only Installation

To generate the license key file for an NSM 2007.3 or later software-only installation:

1. Run the NSM installer image on the server designated for NSM. The NSM Server generates an installation ID.
2. Log in to the LMS system and select **License key generation** for NSM.
3. Enter the serial number and authorization code.

Your serial number is printed on the paper license certificate given to you when you purchased NSM.

Depending on the package you purchased, Juniper Networks provides an authorization code by e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. The Customer Service will validate your purchase and generate a license key file.

4. Enter the installation ID that was generated by the NSM Server.

The LMS system generates a license key file for the SKU recorded. You can choose to download the license key file, or to receive it by e-mail.

5. Save the license key file to your local drive for use during installation.

Generating the License Key for an NSM Appliance Installation

To generate the license key file for an NSM appliance installation:

1. Log in to the LMS system and select **License key generation** for NSM.
2. Enter the serial number and authorization code.

The serial number is on the back of the NSM appliance chassis.

Depending on the package you purchased, Juniper Networks provides an authorization code via e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. Customer Service will validate your purchase and generate a license key.

The LMS system generates a license key file for the SKU recorded. You can choose to download the license key file, or to receive it by e-mail.

3. Save the license key file to your local drive for use during installation.

Generating the License Key for a High Availability NSM Installation

To generate the license key file for an NSM 2007.3 or later HA installation:

1. Run the NSM installer image on the server designated as your primary NSM (or primary GUI server). The NSM Server generates an installation ID.
2. Run the NSM 2007.3 or later installer image on the server designated as your secondary NSM (or secondary GUI server). The NSM Server generates an installation ID.
3. Log in to the LMS system and select **License key generation** for NSM.
4. Enter the serial number and authorization code of your primary NSM.

For an NSM appliance installation, enter the serial number of the primary server. The hardware serial number is located on the back of the NSM appliance chassis.

For a software-only installation:

- a. Enter the serial number.

The serial number of your software is printed on the paper license certificate given to you when you purchased NSM. If you do not have the software serial number or the LMS System fails to recognize the serial number, call Juniper Networks Customer Service.

- b. Enter the installation ID of the primary NSM.

Depending on the package you purchased, Juniper Networks provides an authorization code via e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. Customer Service will validate your purchase and generate a license key.

5. Select the **Need High Availability Key** check box. The LMS systems prompts you to provide the NSM Secondary serial number and Secondary Installation ID.

The LMS system generates a license key file for the SKU recorded. You can choose to download the file, or to receive it by e-mail.

6. Save the license key file to your local drive for use during installation.

Upgrading to an NSM Release that Requires a License

When you upgrade to an NSM 2007.3 or later release from a version that is older than 2007.3, you need to generate a license key file that requires an installation ID.

Generating the License Key for an NSM Software-Only Upgrade

To generate the license key file to upgrade to NSM 2007.3 or later release:

1. Run the NSM installer image on the server designated for NSM. The NSM Server generates an installation ID.

2. Log in to the LMS system and select **License key generation** for NSM.

3. Enter the serial number and authorization code.

Your serial number is printed on the paper license certificate given to you when you purchased NSM. If you do not have the serial number or the LMS System fails to recognize the serial number, call Juniper Networks Customer Service.

Depending on the package you purchased, Juniper Networks provides an authorization code via e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. The Customer Service will validate your purchase and generate a license key.

4. Enter the installation ID that was generated by the NSM Server.

The LMS system generates a license key file for the SKU recorded. You can choose to download the file or to receive it by e-mail.

5. Save the license key file to your local drive for use during installation.

The NSM upgrade to 2007.3 or later release will not proceed without the license key file if NSM manages more than 25 devices.

Generating the License Key for an NSM Appliance Upgrade Installation

To generate the license key file to upgrade an NSM appliance:

1. Log in to the LMS system and select **License key generation** for NSM.

2. Enter the hardware serial number and authorization code.

The hardware serial number is located on the back of the NSM appliance chassis.

Depending on the package you purchased, Juniper Networks provides an authorization code via e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. Customer Service will validate your purchase and generate a license key.

The LMS system generates a license key file for the SKU recorded. You can choose to download the file or to receive it by e-mail.

3. Save the license key file to your local drive for use during installation.

The NSMXpress upgrade to 2007.3 or later release will not proceed without the license key file if NSM manages more than 25 devices.

Generating the License Key File for an NSM 2007.3 or Later High Availability Upgrade Installation

To generate the license key file to upgrade to NSM 2007.3 or later release with high availability:

1. Run the NSM installer image on the server designated as your primary NSM (or primary GUI server). The NSM Server generates an installation ID.
2. Run the NSM 2007.3 or later installer image on the server designated as your secondary NSM (or secondary GUI server). The NSM Server generates an installation ID.
3. Log in to the LMS system and select **License key generation** for NSM.
4. Enter the serial number and authorization code of your primary NSM.

For an NSM appliance installation, enter the serial number of the primary server. The hardware serial number is located on the back of the NSM appliance chassis.

For a software-only installation:

- a. Enter the serial number.

The serial number of your software is printed on the paper license certificate given to you when you purchased NSM. If you do not have the software serial number or the LMS System fails to recognize the serial number, call Juniper Networks Customer Service.

- b. Enter the installation ID of the primary NSM.

Depending on the package you purchased, Juniper Networks provides an authorization code via e-mail. If you received a paper license certificate, and are managing more than 25 devices, call Juniper Networks Customer Service. Customer Service will validate your purchase and generate a license key.

5. Select the **Need High Availability Key** check box. The LMS systems prompts you to provide the NSM Secondary serial number and Secondary Installation ID.

The LMS system generates a license key file for the SKU recorded. You can choose to download the file, or to receive it by e-mail.

6. Save the license key file to your local drive for use during installation.

The NSM upgrade to 2007.3 or later release will not proceed without the license key file if NSM manages more than 25 devices.

Example of an NSM License File

```

-----BEGIN PGP SIGNED MESSAGE-----
Hash: SHA1

NSM License File (v1)
Generated on Thu Sep 20 19:11:08 IST 2007

This license file is for:
    Serial Number: 0000000    Installation ID: 200003AC65C52
    Serial Number: 00000    Installation ID: ID-2

This license file enables the following features:
    High-Availability: Enabled
    Max-Device: 100
    Evaluation-Mode: P30D

This license file reflects the following SKUs:
    NS-SM-ADD-50
    NS-SM-ADD-50

-----BEGIN PGP SIGNATURE-----
Version: GnuPG v1.2.6 (GNU/Linux)

iQCVAwUBRvJ4dCNvzN729P/TAQI+rgQAoG7fGLDh9vCFxbjeMrCGp+zd1AZ0KUxp
7x0rhIZnuT9urbumyQq9yS03ovFjXzTJbiIbncmj6IUh4bkfKpu9H4WIu5qrsBvK
iRHZGJFMBcSCC1eqV0TTBZVF82wblwy+RjWLhw71EHKtU46mVPSYQvy9vZKu/AZf
TwQ3So2hRqg=
=DTk4
-----END PGP SIGNATURE-----

```

If your downloaded license key file has any extra lines before "-----BEGIN PGP SIGNED MESSAGE-----" or after "-----END PGP SIGNATURE-----", delete those lines before installing the license key file.

Installing the License Key File in Various Configurations

Instructions for installing the license key are included in the various installation chapters.

Upgrading the License Key

License upgrades can be purchased at any time for any supported product. After purchasing a license upgrade, you receive a Right to Use (RTU) certificate containing an authorization code that allows you to log in to the LMS system and generate a permanent license key that can be applied to the NSM product.

Viewing License Key Information

You can view key information about licenses, in the **NSM License Information** window. From the menu bar, select **Tools > NSM License Information** to view this information

Enforcing Licenses

The maximum number of devices allowed for NSMXpress appliance installations is 525. The maximum number of devices allowed for NSM software-only installations is 6025. These numbers include all modeled devices, vsys devices, and cluster devices.

Each cluster member of a cluster device counts as one device.

Even though the SKU installation is cumulative, NSM restricts the maximum number of manageable devices. NSM rejects the application for a license when the maximum device supported limit is reached for both appliance and software installations.

If you add a device after the number of devices added reaches 90 percent of the license limit, a warning message appears. If you try to add an extra device after the maximum limit is reached, a dialog box appears with the message “Maximum number of supported devices is reached.” You are not allowed to add devices after reaching the license limit. you must purchase an upgrade before adding more devices.

Licensing FAQ

[Table 147 on page 358](#) answers frequently asked questions about NSM licensing.

Table 147: Licensing FAQ

Question	Answer
Which device types does NSM count towards the total device count?	NSM counts each single addition of a firewall, IDP, router, switch, Secure Access, or Infranet Controller device as one device. Each cluster member counts as one device. Each vsys device added to a firewall root device counts as one device.

Table 147: Licensing FAQ (*Continued*)

Question	Answer
Does NSM Central Manager (NS-SM-A-CM) require a license key file?	The NSM Central Manager does not require a license key file for installation. Enforcement is built into the product.
Are there any differences in licenses for an NSM appliance and software-only installations?	No. Both follow the same licensing scheme, but their installation methods are different. NSM software version uses the NSM Installer to install the new license. An NSM appliance uses the Web UI to install the license. A license can also be installed via the NSM UI after the base installation is completed.
What is the procedure to add a new license after the device count limit is reached?	License upgrades can be purchased at any time for any supported product. After purchasing a license upgrade, you receive a Right to Use (RTU) certificate containing an authorization code that allows you to log in to the LMS system and generate a permanent license key that can be applied to the NSM product. License key updates can then be applied from NSM GUI from Tools > NSM License Information .
I already have NSM installed in my network. I have more than 25 devices installed on NSM. Do I need a license key file to upgrade to 2007.3 or later release?	Yes, if you are upgrading from a release that is older than 2007.3.
What is the procedure to obtain the license key file?	For new installations, see "Installing NSM for the First Time" on page 352 . For upgrades, see "Upgrading to an NSM Release that Requires a License" on page 354 .
I don't have an NSM Serial number available. What do I do?	Call Juniper Networks Customer Service.

Licenses for J-Web Device Manager

IN THIS SECTION

- [Managing Licenses for the EX Series Switch \(J-Web Procedure\) | 360](#)

Managing Licenses for the EX Series Switch (J-Web Procedure)

IN THIS SECTION

- [Adding New Licenses | 360](#)
- [Deleting Licenses | 361](#)
- [Displaying License Keys | 361](#)
- [Downloading Licenses | 361](#)

This topic applies only to the J-Web Application package.

To enable and use some Junos OS features on an EX Series switch, you must purchase, install, and manage separate software licenses. Each switch requires one license. For a Virtual Chassis deployment, two licenses are recommended for redundancy. After you have configured the features, you see a warning message if the switch does not have a license for the feature.

Before you begin managing licenses, be sure that you have:

- Obtained the needed licenses. For information about how to purchase software licenses, contact your Juniper Networks sales representative.
- Understand what makes up a license key. For more information, see *License Key Components for the EX Series Switch*.

This topic includes the following tasks:

Adding New Licenses

To add one or more new license keys on the switch, with the J-Web license manager:

1. In the J-Web interface, select **Maintain > Licenses**.
2. Under Installed Licenses, click **Add** to add a new license key or keys.
3. Do *one* of the following, using a blank line to separate multiple license keys:

- In the License File URL box, type the full URL to the destination file containing the license key or keys to be added.
- In the License Key Text box, paste the license key text, in plain-text format, for the license to be added.

4. Click **OK** to add the license key or keys.

A list of features that use the license key is displayed. The table also lists the ID, state, and version of the license key.

Deleting Licenses

To delete one or more license keys from a switch with the J-Web license manager:

1. In the J-Web interface, select **Maintain > Licenses**.
2. Select the check box of the license or licenses you want to delete.
3. Click **Delete**.

Displaying License Keys

To display the license keys installed on a switch with the J-Web license manager:

1. In the J-Web interface, select **Maintain > Licenses**.
2. Under Installed Licenses, click **Display Keys** to display all the license keys installed on the switch.

A screen displaying the license keys in text format appears. Multiple licenses are separated by a blank line.

Downloading Licenses

To download the license keys installed on the switch with the J-Web license manager:

1. In the J-Web interface, select **Maintain > Licenses**.
2. Under Installed Licenses, click **Download Keys** to download all the license keys installed on the switch to a single file.
3. Select **Save it to disk** and specify the file to which the license keys are to be written. You can also download the license file to your system.

CHAPTER 11

Licenses for Contrail Service Orchestration

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Licenses for Contrail Service Orchestration

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- [About the Device License Files Page | 362](#)
- [Uploading a Device License File | 364](#)
- [Editing and Deleting Device Licenses | 365](#)
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About the Device License Files Page

IN THIS SECTION

- [Tasks You Can Perform | 363](#)
- [Field Descriptions | 363](#)

To access this page, click **Administration > Licenses> Device Licenses**.

You can use the Device License Files page to upload licenses for devices and virtual network services from your local file system. Each device license file should contain only one license key. A license key is required to enable various features including virtual network services such as application-based routing, application monitoring, and vSRX security features.

Tasks You Can Perform

You can perform the following tasks from this page:

- Add device license files. See [Uploading a License File](#).
- Edit and delete device license entries. See ["Editing and Deleting Device Licenses" on page 365](#).
- Push licenses to devices. See ["Pushing a License to Devices" on page 366](#).
- View details of a device license. Click the details icon that appears when you mouse over the row for each license file or click **More > Details**. See [Viewing Object Details](#).
- Show or hide columns about the device license files.
- Sort the device license files. See [Sorting Objects](#).
- Search an object about the device license files. See [Searching for Text in an Object Data Table](#).

Field Descriptions

[Table 148 on page 363](#) describes the fields on the License Files page.

Table 148: Fields on the License Files Page

Field	Description
File Name	Displays the filename of the license. Example: license_Image_v1.txt
Description	Displays the description of the license. Example: License file for application routing.

Table 148: Fields on the License Files Page *(Continued)*

Field	Description
Tenant	Displays the name of the tenant if the license is associated with a tenant. Example: Tenant 1
Uploaded By	Displays the administrator who uploaded the license. Example: test_admin
Uploaded	Displays the date and time when the license was uploaded. Example: Jun 5, 2018, 12:41:08 PM
Devices	Displays the number of devices to which the license is pushed. Click the number to view the devices to which the license is pushed.

Uploading a Device License File

To upload a device license file:

1. Click **Administration > Licenses > Device Licenses**.

The Device License Files page appears.

2. Click the plus icon (+).

The Add Device Licenses page appears.

3. In the Device License File field, specify the location of the license file that you want to upload.
Alternatively, you can click Browse to navigate to the file location and select the file.

NOTE: Each license file should contain only one license key.

4. (Optional) From the Tenants list, select the tenant to which you want to associate the license file.

If you associate a license with a tenant, you can apply that license only to devices that belong to that tenant. If a tenant has licenses associated with the tenant, when a device is activated during ZTP, a matching license from the licenses associated with the tenant is downloaded to the device.

You can apply a license that is not associated with a tenant to any device of any of the tenants. During ZTP, when a device is activated for a tenant that does not have any license associated with it, a matching license from the licenses that are not associated with any tenant is downloaded to the device.

5. In the Description field, enter a description for the license that you want to upload.
6. Click **OK** to upload the license.

You are returned to the Device License Files page.

Editing and Deleting Device Licenses

IN THIS SECTION

- [Editing a Device License Entry | 365](#)
- [Deleting a Device License | 365](#)

The following sections describe the procedure for editing and deleting uploaded device licenses:

Editing a Device License Entry

You can edit a device license entry to modify the description for the license file.

1. Click **Administration > Licenses > Device Licenses**.

The Device License Files page appears.

2. Select the device license for which you want to modify the description and click the Edit icon.

The Update Device License page appears.

3. Update the description.

4. Click **OK** to save the changes. To discard the changes, click **Cancel**.

If you click **Cancel**, a confirmation message appears. Click **Yes** to confirm that you want to cancel the update.

Deleting a Device License

To delete a device license:

1. Click **Administration > Licenses > Device Licenses**.

The Device License Files page appears.

2. Select the device license that you want to delete and click the delete icon.

3. In the confirmation message, click **Yes** to delete the device license.

To cancel the delete operation, click **No**.

Pushing a License to Devices

You can push licenses on to devices from the Licenses page of the Administration portal. If a license is associated with a tenant, you can push that license only to devices associated with that tenant. However, if no tenant is associated with a license, you can apply the license to any device that belongs to any tenant.

When a license is applied to a device, the license information is added to the device object. When the same license is pushed to the device again, the a device-level error message is created. Similarly, if a pushed license does not match a device, the device generates an error message.

To push a license to a device:

1. Click **Administration > Licenses > Device Licenses**.

The License Files page appears.

2. Select the license that you want to push to a device.

The **Push License** button is enabled.

3. Click the **Push License** button.

The Push License page appears.

4. From the Tenants list, select the tenant associated with the site and devices to which you want to apply the license.

NOTE: If the license has already been associated with a tenant, you cannot select a different tenant. You can apply the license only to the sites and devices associated with the tenant.

Sites and devices associated with the selected tenant appear.

5. Select the sites and devices to which you want to apply the license and click **Push Licenses**.

CSO applies the license to the selected devices.

About the CSO Licenses Page

IN THIS SECTION

- [Tasks You Can Perform | 367](#)
- [Field Descriptions | 367](#)

To access this page, click **Administration > Licenses > CSO Licenses**.

Users with the OpCo Administrator role can use the CSO Licenses page to view information about the CSO licenses issued by the SP administrator, assign the licenses to one or more tenants, and update or unassign license assignments.

Tasks You Can Perform

You can perform the following tasks from this page:

- Assign CSO licenses to one or more tenants—See ["Assign CSO Licenses, and Update or Unassign CSO License Assignments" on page 369](#).
- View the tenants previously assigned to a CSO license—Click *assigned-number* corresponding to a license. The View Assigned page appears displaying the tenants and quantity assigned to each tenant.
- Update or unassign CSO license assignments—See ["Assign CSO Licenses, and Update or Unassign CSO License Assignments" on page 369](#).
- Search for CSO licenses by using keywords—Click the search icon and enter the search term in the text box and press Enter. The search results are displayed on the same page.

You can search using license SKU, sales order, type, tier, or device class.

- Sort CSO licenses—Click a column name to sort based on the column name.

NOTE: Sorting is applicable only to some fields.

- Show or hide columns—Click the **Show Hide Columns** icon at the top right corner of the page and select the columns that you want displayed on the CSO Licenses page.

Field Descriptions

[Table 149 on page 367](#) describes the fields on the CSO Licenses page.

Table 149: Fields on the CSO Licenses page

Field	Description
License SKU	Displays the license SKU name; for example, S-CSO-C-S1-A-3.

Table 149: Fields on the CSO Licenses page *(Continued)*

Field	Description
Sales Order	Sales order number; for example, 15563238.
Type	Type of site—on-premise or cloud.
Tier	Support tier associated with the license; for example, Standard.
Device Class	Class of the Juniper device associated with the license; for example, B-class.
SSRN	Software support reference number, which is necessary to identify your purchase order when you contact Juniper Networks for support
Start Date	Date (in MMM DD , YYYY format) from which the license is valid; for example, Aug 29, 2019.
End Date	Date (in MMM DD , YYYY format) up to which the license is valid. CSO calculates the end date based on the validity of the license SKU.
Device Quantity	Total number of devices (that the tenant can add) that you can assign for a license.
Available	Available number of devices (that the tenant can add) that you can assign to tenants.

Table 149: Fields on the CSO Licenses page (Continued)

Field	Description
Assigned	<p>Number of devices (that the tenant can add) that are already assigned to one or more tenants:</p> <ul style="list-style-type: none">• Click <i>assigned-number</i> to view the tenants and quantity assigned for each tenant. The View Assigned page appears displaying the tenants and quantity assigned to each tenant.• If the CSO license is not assigned to any tenants, click Assign to assign the license to one or more tenants. See "Assign CSO Licenses, and Update or Unassign CSO License Assignments" on page 369.

Assign CSO Licenses, and Update or Unassign CSO License Assignments

IN THIS SECTION

- [Assign CSO Licenses to Tenants | 369](#)
- [Update or Unassign CSO License Assignments | 371](#)

Users with the Operating Company (OpCo) Administrator role can:

- Assign a CSO license to one or more tenants.
- Update the assignment of a CSO license that was previously assigned to one or more tenants.
- Unassign a CSO license that was previously assigned to a tenant.

Assign CSO Licenses to Tenants

To assign a CSO license that is not yet assigned to a tenant:

1. Select **Administration > Licenses > CSO Licenses**.

The CSO Licenses page appears.

2. Click the **Assign** link corresponding to the license that you want to assign (in the Assigned column).

The Assign CSO License page appears.

3. Configure the fields according to the guidelines provided in [Table 150 on page 370](#).

4. Click **Assign**.

CSO validates the quantities that you assigned against the total quantity for the license:

- If the sum of assigned quantities is greater than the total quantity, an error message is displayed. You must then modify the assigned quantities to proceed.
- If the sum of assigned quantities is less than or equal to the total quantity, a job is triggered. You are returned to the CSO Licenses page and a confirmation message is displayed on the top of the page. After the job completes successfully, the CSO Licenses page displays the updated information in the Available and Assigned columns.

Table 150: Fields on the Assign CSO License page

Field	Description
License Information	<p>Displays the following information for the license:</p> <ul style="list-style-type: none"> • Sales Order • License SKU • Start Date
<i>License Assignment</i>	
Device Quantity	Displays the total quantity that can be assigned to tenants.
Available	Displays the available quantity that can be allocated to tenants.

Table 150: Fields on the Assign CSO License page *(Continued)*

Field	Description
Tenants List	<p>To assign the license to one or more tenants:</p> <ol style="list-style-type: none"> 1. Click the + icon. A row is added in the grid and selected. 2. In the Tenant column, select the tenant to which you want to assign the license. 3. In the Device Quantity column, enter the quantity that you want to assign to the tenant. 4. Click ✓ (check mark) to save your changes. 5. (Optional) Click the pencil icon to modify the tenant name or the quantity and click ✓ (check mark) to save your changes. 6. (Optional) Repeat the steps if you want to assign the license to additional tenants.

Update or Unassign CSO License Assignments

For a CSO license that is already assigned to one or more tenants, to update or unassign the license assignment:

1. Select **Administration > Licenses > CSO Licenses**.

The CSO Licenses page appears.

2. Select the license for which you want to update or unassign the license assignment and click the **Update Assignment** button.

The Assign CSO License page appears.

3. From the list of tenants displayed in the grid, select the tenant (row) and do one of the following:

- To update the license assignment:
 - a. Click the edit (pencil) icon.
 - b. In the **Device Quantity** column, modify the device quantity.
 - c. Click **✓** (check mark) to save your changes.

The modification that you made is displayed in the grid.

- To unassign the license assignment:

- a. Click the delete (trash can) icon.

A popup appears asking you to confirm the unassign operation.

- b. Click **Yes**.

The license is unassigned from the tenant that you selected and the tenant is removed from the grid.

4. (Optional) If the available quantity is non-zero, you can assign the license to additional tenants. See [Table 150 on page 370](#) for more information.

5. Click **Assign**.

CSO validates the modifications against the total device quantity for the license:

- If the sum of assigned quantities is greater than the total quantity, an error message is displayed. You must then modify the assigned quantities to proceed.
- If the sum of assigned quantities is less than or equal to the total quantity, a job is triggered and you are returned to the CSO Licenses page. A confirmation message is displayed on the top of the page.

After the job completes successfully, the CSO Licenses page displays the updated information in the Available and Assigned columns.

Licenses for Steel-Belted Radius Carrier

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- Obtaining License Keys | 373

Obtaining License Keys

You must have a unique single-seat software license key for each server installation and for each optional module that you want to activate.

If you are installing Session State Register, you need a license for each SBR Carrier server, each optional module, and a Starter Kit license—a single number that is used on all four servers in the Starter Kit cluster. If you are installing more nodes than in the Starter Kit, each additional SBR Carrier server, Expansion Kit, and Management Node kit require unique licenses.

When a license for the base product or an optional module is purchased, a certificate containing an authorization code is issued. Use the authorization code to generate a license key on the Juniper Networks support server.

1. Go to <https://www.juniper.net/lcrs/license.do>. You may be prompted to log in.
2. On the Manage Product Licenses screen, select SBR Carrier from the drop-down list and click **Go**.

MANAGE PRODUCT LICENSES

License Activation Keys enable features, capacity and subscriptions on Juniper hardware and software products. In the License Manager, you can generate license activation keys, find, transfer and download your existing keys.

Generate Licenses **Find License Keys**

Enable new features on your products or generate a replacement licenses to enable features on an RMA device.

Select... **GO**

- Select...
- ACX Series
- Application Acceleration Products
- EX-series Products
- Firewall/IPSec VPN
- Identity and Policy Control (IPC) SRC
- Intrusion Detection and Prevention Appliance (IDP)
- J-Series Service Routers and SRX Devices
- JUNOS SDK Applications
- Junos Space
- Network & Security Manager (NSM)
- NFX
- Packet-Optical
- QFX Series Product
- Secure Analytics (STRM)
- SBR Carrier**
- vMX
- vSRX
- WLM Series

3. Enter the authorization code from your certificate and the registered E-mail address. (The E-mail address is used only for account verification at this point; you can elect not to receive the license through E-mail in the next step.)

GENERATE LICENSE KEYS : SBR AND IMS AAAAND OAC PRODUCTS (FORMERLY FUNK)

Attention: To generate license unlocking key(s) for SBR Carrier, proceed below. To generate license unlocking key(s) for OAC or SBR EE or SBR GE, please go to the PulseSecure (www.pulsesecure.net) license unlocking key page reached by accessing links found on <http://www.juniper.net/support/pulse.html>. To generate a license unlocking key for SBR Carrier Products please enter the Authorization Code.

The Authorization Code can be found in the certificate you received when you purchased this feature. You will be presented with an unlocking key for the current shipping SBR Carrier Version.

Note: You can generate an unlocking key for a downgrade version as you progress with license key generation.

* indicates required items

Authorization Code *

For example, aBC1-02eF-34Gh-5iJk

Customer Email Address *

GENERATE **CANCEL**

4. When the key is generated, a success screen is displayed. You can view the license online and record the key number, download it, or have it sent to the E-mail address you entered.

3

PART

Activate License Keys

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Activate License Keys

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- [Activate Contrail Insights Licenses | 377](#)
- [Activate CSO and Juniper Sky Enterprise Licenses | 378](#)
- [Activate Juniper ATP Appliance Licenses | 379](#)
- [Activate NorthStar Controller Licenses | 381](#)

Activate Junos OS Licenses

1. Gather your activation codes.

Activation Code: The 17-digit alphanumeric activation code is sent through email in response to your order and is used to generate license capacity / feature activation key(s) for your Juniper Networks software. The activation code is used to generate your license activation key—it is not the license activation key itself.

2. Download Software.

Go to Juniper's [Support Downloads](#) page. A Juniper Customer Support Center (CSC) user account is needed to access support content. (If you do not already have an account, go to [Login Assistance](#).) Look for and click on your software's product line and download the software

3. Install the software according to the instructions in the product documentation.
4. Generate and install license activation key(s).

Upon initial setup, a base activation key might be required to activate the software. If further capacity or feature(s) were purchased and are being added to the software, each capacity increment and feature needs to be added via another activation key. Generate license activation keys using the [Juniper Agile Licensing Portal](#). At the top of the portal, enter your activation code, and click Activate. Then follow the instructions on screen. Juniper provides license activation keys in one of two ways:

- Download: You can download activation keys from the [Juniper Agile Licensing Portal](#).
- Email: You receive an email that contains the license activation key(s).

5. Obtain internet activation.

The software might connect to the [Juniper Agile Licensing Portal](#) through the internet as part of the activation sequence.

Activate Contrail Insights Licenses

This topic describes how to obtain the appropriate product keys and software required for your Juniper® Contrail® Insights product.

1. Create a user account.

To download your software, you need an approved user account with Juniper Networks. If you do not already have one, you can create an account through the [User Registration Portal](#).

2. Forward your fulfillment e-mail to the Juniper account activation team.

Locate the fulfillment e-mail(s) that you received and forward it to <mailto:appformix-key-request@juniper.net>. (These e-mails verify that you purchased the product.) Identify the subject as "AppFormix Product Keys Needed." Add the following information to the e-mail:

- Company name
- Primary contact name
- Full company address
- Contact e-mail address
- Contact phone number

You will receive an e-mail confirmation acknowledging your activation request. The Juniper product activation team will complete the activation request within two business days.

3. Retrieve your software serial number.

The software serial number is a unique 14-digit number that Juniper uses to identify your Juniper Networks software installation (or purchased capacity). You can find this number in the Software Serial Number Certificate attached to the e-mail sent when you ordered your Juniper Networks Service. Store the Software Serial Number in a safe place, as it will be necessary to identify your installation when engaging Juniper for support.

4. Download your Software.

Find your product software on the [Juniper Software Downloads page](#). You will need to sign in with your Juniper user account and provide your Software Serial Number.

5. Install your Software.

Install your software according to the instructions in the software documentation at [Contrail Insights](#). Make sure to enter the license key as instructed during installation.

Need Help?

For additional assistance, you may contact Juniper Networks by opening a case online through the Juniper Customer Support Center (CSC) [Service Request Manager](#).

RELATED DOCUMENTATION

| [Contrail Insights Documentation](#)

Activate CSO and Juniper Sky Enterprise Licenses

This topic describes how to activate Juniper Contrail Service Orchestration and Juniper Sky Enterprise.

Note: These instructions are written for the customer who will be using the product. If you are a partner, reseller, or distributor who is setting up Contrail Service Orchestration and Juniper Sky Enterprise for an end customer, please fill in the details about the customer.

1. Create a user account.

If you don't already have a Juniper user account, go to the [User Registration Portal](#) to create one. (For detailed instructions, see [KB 9946: Create a New User Login Account with Juniper Networks](#).)

Important: When creating your account, do not select *Guest User Access* or *Use your Cloud Marketplace or Cloud Service Provider credentials*. If you choose either of these options, you will not be able to use the resulting user account to activate your licenses in the next step.

2. Locate your license certificate.

When you purchased your Juniper product, you should have received an e-mail containing information about your software license. Locate that e-mail and the attached certificate, which contains details you need to activate your product.

3. Enter your activation code.

Sign into the [Juniper Agile Licensing Portal](#). At the top of the screen, enter the activation code (also sometimes called an authorization code) located in your license certificate, and click **Activate**.

4. Activate your licenses.

Choose one of the following options in the Product Activation screen:

- **Add devices to an existing account instance:** Select this option if you are simply adding additional licenses to an existing Contrail Service Orchestration or Juniper Sky Enterprise account. Then, select your preexisting account.
- **Register a new account instance:** Select this option if you are activating Contrail Service Orchestration or Juniper Sky Enterprise for the first time. Then, provide relevant account details.

Note: When creating an account, you will be asked to select an account type (Enterprise or Service Provider). If you are a partner, distributor, or reseller filling in this form for a customer, specify your customer's business type, not your own.

5. Complete your request.

Juniper will complete the request and e-mail you the details you need to activate your new product within two (2) business days.

Need Help?

For additional assistance, you may contact Juniper Networks by opening a case online through the Juniper Customer Support Center (CSC) [Service Request Manager](#).

RELATED DOCUMENTATION

[Contrail Service Orchestration Documentation](#)

[Juniper Sky Enterprise Documentation](#)

Activate Juniper ATP Appliance Licenses

This topic describes how to obtain the appropriate license keys and software required for your Juniper Networks Advanced Threat Prevention Appliance.

1. Create a user account.

To download your software, you need an approved user account with Juniper Networks. If you do not already have one, you can create an account through the [User Registration Portal](#).

Note: Compliance approval typically takes two hours following the creation of a new Juniper User Account.

2. Retrieve your software serial number.

The software serial number is a unique 14-digit number that Juniper uses to identify your Juniper Networks software installation (or purchased capacity). You can find this number in the Software Serial Number Certificate attached to the e-mail sent when you ordered your Juniper Networks Service. Store the Software Serial Number in a safe place, as it will be needed to identify your installation when engaging Juniper for support. Note that this number is different than the license key described in Step 3.

3. Request your license key.

Open an admin service request (case) using our [Service Request Manager](#) on the Juniper Customer Support Center (CSC) and enter the following information to facilitate your request. You may also call Customer Care via telephone if you prefer:

- Subject Line: Juniper ATPA Software License Request
- Description:
 - Sales order number
 - Software product SKU
 - UUID (for assistance finding your UUID, see [kb.juniper.net\kb32301](http://kb.juniper.net/kb32301))
 - Serial Number/SSRN (enter the software serial number provided in your license fulfillment e-mail). If available, please attach the software serial number certificate (PDF) to the admin service request.

Once your service request is processed, your license key will be sent to you.

4. Download your software.

If you need to download your software, you can find it on the [Juniper Software Downloads page](#). You will need to sign in with your Juniper user account and provide your Software Serial Number.

Note: If you receive an account privileges error, please contact Customer Care to have your account upgraded. Be prepared to provide your Software Serial Number as proof of purchase.

5. Install your software.

Install your software according to the instructions in the software documentation at [JATP400 Advanced Threat Prevention Appliance](#) and [JATP700 Advanced Threat Prevention Appliance](#). Make sure to enter the license key as instructed during installation.

Need Help?

For additional assistance, you may contact Juniper Networks by opening a case online through the Juniper Customer Support Center (CSC) [Service Request Manager](#).

RELATED DOCUMENTATION

[JATP and SRX Series Integration Guide](#)

[JATP Operator's Guide](#)

[JATP Technical Documentation](#)

Activate NorthStar Controller Licenses

This topic describes how to obtain the appropriate license keys and software required for your Juniper Networks NorthStar Controller product.

1. Create a user account.

To download your software, you need an approved user account with Juniper Networks. If you do not have one already, you can create an account through the [User Registration Portal](#).

2. Request your software serial number certificates (if you don't already have them).

The software serial number is a unique 14-digit number that Juniper uses to identify your Juniper Networks software installation (or purchased capacity). You can find this number in the software serial number certificate attached to the e-mail sent when you ordered your Juniper Networks service. Store the software serial number in a safe place, as it will be necessary to identify your installation when engaging Juniper for support. Note that this number is different than the license key described in Step 3.

3. Forward your fulfillment e-mail to the Juniper account activation team.

Locate the fulfillment e-mail(s) that you received and forward it/them to northstar-key-request@juniper.net as well as to your Juniper account manager. (These e-mails verify that you purchased the product.) Identify the subject as "(your company name) NorthStar license keys needed" and add the following information to the e-mail:

- Company name
- Primary contact name
- Full company address
- Contact e-mail address

- Contact phone number
- Existing customers only: Copy of the existing NorthStar license file (obtainable in the NorthStar GUI)
- Releases before 6.0: Card name and MAC address (e.g., eth0, MAC = C8:1F:66:B9:70:AF)

You will receive an e-mail confirming your activation request. The Juniper product activation team will complete the activation request within two business days and send you a license key.

4. Download your software.

Find your product software on the [Juniper Software Downloads page](#). You will need to sign in with your Juniper user account and provide your software serial number.

5. Install your software.

Install your software according to the instructions in the software documentation at [NorthStar Controller](#). Make sure to enter the license key as instructed during installation.

Need Help?

For additional assistance, you may contact Juniper Networks by opening a case online through the Juniper Customer Support Center (CSC) [Service Request Manager](#).

RELATED DOCUMENTATION

| [NorthStar Controller Technical Documentation](#)

4

PART

Manage Your Licenses

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Manage Your Licenses

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Managing Licenses

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Adding New Licenses (CLI Procedure)

IN THIS SECTION

- [Installing a License Using a Configuration Statement | 385](#)
- [Installing a License Using an Operational Command | 390](#)

Before adding new licenses, complete the following tasks:

- Purchase the required licenses.
- Establish basic network connectivity with the router or switch. For instructions on establishing basic connectivity, see the *Getting Started Guide* or *Quick Start Guide* for your device.

There are two ways to add licenses using the Junos OS CLI:

- The `system license keys key` configuration statement enables you to configure and delete license keys in a Junos OS CLI configuration file.
- The `request system license add` operational command installs a license through URL or using the license file.

On QFabric systems, install your licenses in the default partition of the QFabric system and not on the individual components (Node devices and Interconnect devices).

To add licenses, complete one of the following procedures:

Installing a License Using a Configuration Statement

IN THIS SECTION

- [Installing Licenses Using the CLI Directly | 386](#)
- [Installing Licenses Using a Configuration File | 387](#)

Starting with Junos OS Release 15.1, you can configure and delete license keys in a Junos OS CLI configuration file. The `system license keys key` statement at the `[edit]` hierarchy level installs a license by using a configuration statement.

The `system license keys key` configuration statement is not required to install a license. The operational command `request system license add` installs a license immediately. But because the `set system license keys key` command is a configuration statement, you can use it to install a license as part of a configuration commit, either directly or by configuration file.

The license keys are validated and installed after a successful commit of the configuration file. If a license key is invalid, the commit fails and issues an error message. You can configure individual license keys or multiple license keys by issuing Junos OS CLI commands or by loading the license key configuration contained in a file. All installed license keys are stored in the `/config/license/` directory.

Select a procedure to install a license using configuration:

Installing Licenses Using the CLI Directly

To install an individual license key using the Junos OS CLI:

1. Issue the `set system license keys key name` statement.

The *name* parameter includes the license ID and the license key. For example:

```
[edit]
user@device# set system license keys key "JUNOS_TEST_LIC_FEAT xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx"
```

To install multiple license keys in the Junos OS CLI, issue the `set system license keys key name` statement for each license key to install. For example:

```
[edit]
user@device# set system license keys key "key_1"
set system license keys key "key_2"
set system license keys key "key_2"
set system license keys key "key_4"
```

2. Issue the `commit` command.

```
[edit]
user@device# commit
commit complete
```

3. Verify that the license key was installed.

For example:

```
user@device# run show system license
```

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
sdk-test-feat1	0	1	0	permanent

Licenses installed:

License identifier: JUNOS_TEST_LIC_FEAT

License version: 2

Features:

 sdk-test-feat1 - JUNOS SDK Test Feature 1
 permanent

Alternatively, you can issue the `show system license` command from operational mode.

Installing Licenses Using a Configuration File

Before you begin, prepare the configuration file. In this example, use the Unix shell `cat` command to write the **license.conf** file:

1. Go to the shell.

```
[edit]
user@device# exit
user@device> exit
%
```

2. Open the new **license.conf** file.

```
% cat > license.conf
```

3. Type the configuration information for the license key or keys:

- For a single license, for example, type the following content:

```
system {
  license {
    keys {
```

```

        key "JUNOS_TEST_LIC_FEAT xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx";
    }
}
}

```

- For multiple license keys, for example, type something like this:

```

system {
  license {
    keys {
      key "key_1"
      key "key_2"
      key "key_3"
      ...
      key "key_n"
    }
  }
}

```

4. Press Ctrl+d to save the file.

To install a license key configuration in a file:

1. Go to the CLI configuration mode.

```

% cli
user@device> configure
[edit]
user@device#

```

2. Load and merge the license configuration file.

For example:

```

user@device# load merge license.conf
load complete

```

3. Issue the `show | compare` command to see the configuration.

For example:

```
[edit]
user@device# show | compare
[edit system]
+ license {
+   keys {
+     key "JUNOS_TEST_LIC_FEAT xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx";
+   }
+ }
```

4. Issue the `commit` command.

```
[edit]
user@device# commit
```

5. To verify that the license key was installed, issue the `show system license` command.

For example:

```
root@switch> show system license
```

License usage:

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
sdk-test-feat1	0	1	0	permanent

Licenses installed:

License identifier: JUNOS_TEST_LIC_FEAT

License version: 2

Features:

```
  sdk-test-feat1  - JUNOS SDK Test Feature 1
    permanent
```

Reboot the device after license installation on the SRX300, SRX320, SRX320-POE, SRX340, SRX345, SRX380, SRX550, and SRX550-M devices. Rebooting the device sets system resources to support session capacity of the installed license.

Installing a License Using an Operational Command

IN THIS SECTION

- [Adding a License to a Device with a Single Routing Engine | 390](#)
- [Adding a License to a Device with Dual Routing Engines | 390](#)

Complete the procedure that relates to your system:

Adding a License to a Device with a Single Routing Engine

To add a new license key to the device using an operational command:

1. From the CLI operational mode, enter one of the following CLI commands:

- To add a license key from a file or URL, enter the following command, specifying the filename or the URL where the key is located:

```
user@host> request system license add filename | url
```

- To add a license key from the terminal, enter the following command:

```
user@host> request system license add terminal
```

2. When prompted, enter the license key, separating multiple license keys with a blank line.

If the license key you enter is invalid, an error appears in the CLI output when you press Ctrl+d to exit license entry mode.

3. Go on to *Verifying Junos OS License Installation (CLI)*.

Adding a License to a Device with Dual Routing Engines

On routers that have graceful Routing Engine switchover (GRES) enabled, after successfully adding the new license on the primary Routing Engine, the license keys are automatically synchronized on the backup Routing Engine as well. However, in case GRES is not enabled, the new license is added on each Routing Engine separately. This ensures that the license key is enabled on the backup Routing Engine during changeover of primary role between the Routing Engines.

To add a new license key to a router with dual Routing Engines without GRES:

1. After adding the new license key on the primary Routing Engine, use the `request chassis routing-engine master switch` command to have the backup Routing Engine become the primary Routing Engine.
2. Log in to the active Routing Engine and add the new license key, repeat the same step.

Adding a license key to the router or switch might be delayed if a kernel resynchronization operation is in progress at that time. The following message is displayed on the CLI when the license-adding operation is about to be delayed:

A kernel re-sync operation is in progress. License update may take several minutes to complete.

RELATED DOCUMENTATION

Junos OS Feature Licenses

IDP Basic Configuration

Deleting License Keys (CLI)

IN THIS SECTION

- [Using the Operational Command to Delete Licenses | 391](#)
- [Using a Configuration Command to Delete Licenses | 392](#)

Before deleting a license, ensure that the features enabled by the license will not be needed.

You can use the `request system license delete operational` command, or the `delete` or `deactivate configuration` command to delete a license:

Using the Operational Command to Delete Licenses

To delete licenses using the `request system license delete` command:

1. Display the licenses available to be deleted.

```
user@host> request system license delete license-identifier-list ?
Possible completions:
  E00468XXX4      License key identifier
  JUNOS10XXX1     License key identifier
  JUNOS10XXX2     License key identifier
```

JUNOS10XXX3	License key identifier
JUNOS10XXX4	License key identifier
[Open a set of values

2. To delete a license key or keys from a device using the CLI operational mode, select one of the following methods:

- Delete a single license by specifying the license ID. Using this option, you can delete only one license at a time.

```
user@host> request system license delete license-identifier
```

- Delete all license keys from the device.

```
user@host> request system license delete all
```

- Delete multiple license keys from the device. Specify the license identifier for each key and enclose the list of identifiers in brackets.

```
user@host> request system license delete license-identifier-list [JUNOS10XXX1 JUNOS10XXX3  
JUNOS10XXX4 ...]
```

```
Delete license(s) ?  
[yes,no] (no) yes
```

3. Verify the license was deleted by entering the `show system license` command.

Using a Configuration Command to Delete Licenses

Starting in Junos OS Release 16.1, to remove licenses from the configuration, you can use either the `delete` or `deactivate` configuration command. The `delete` command deletes a statement or identifier, and all subordinate statements and identifiers contained within the specified statement path are deleted with it. The `deactivate` command adds the `inactive:` tag to a statement, effectively commenting out the statement or identifier from the configuration. Statements or identifiers marked as inactive do not take effect when you issue the `commit` command. To remove the `inactive:` tag from a statement, issue the `activate` command. Statements or identifiers that have been activated take effect when you next issue the `commit` command.

The following procedure uses the `delete` command, but you could use the `deactivate` command as well.

To delete one or all licenses using the delete command:

You can use the deactivate command instead of the delete command in this procedure.

1. Display the licenses available to be deleted.

Issue the `run request system license delete license-identifier-list ?` command from the configuration mode of the CLI.

```
[edit]
user@host# run request system license delete license-identifier-list ?
```

A list of licenses on the device is displayed:

```
Possible completions:
E00468XXX4      License key identifier
JUNOS10XXX1     License key identifier
JUNOS10XXX2     License key identifier
JUNOS10XXX3     License key identifier
JUNOS10XXX4     License key identifier
[               Open a set of values
```

2. Delete the license or licenses you want.

- To delete a single license, for example:

```
[edit]
user@host# delete system license keys key "E00468XXX4"
```

- To delete all licenses, for example:

```
[edit]
user@host# delete system license keys
```

3. Commit the configuration by entering the commit command.

4. Verify the license was deleted by entering the show system license command.

Release History Table

Release	Description
16.1	Starting in Junos OS Release 16.1, to remove licenses from the configuration, you can use either the delete or deactivate configuration command.

Verifying Junos OS License Installation (CLI)

IN THIS SECTION

- [Displaying Installed Licenses | 394](#)
- [Displaying License Usage | 396](#)

To verify Junos OS license management, perform the following tasks:

Displaying Installed Licenses

IN THIS SECTION

- [Purpose | 394](#)
- [Action | 394](#)
- [Meaning | 395](#)

Purpose

Verify that the expected licenses are installed and active on the device.

Action

From the CLI, enter the `show system license` command.

Sample Output

command-name

```
user@host> show system license
```

License usage:

	Licenses	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
subscriber-acct	0	1	0	permanent
subscriber-auth	0	1	0	permanent
subscriber-addr	0	1	0	permanent
subscriber-vlan	0	1	0	permanent
subscriber-ip	0	1	0	permanent
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent

Licenses installed:

License identifier: E000185416

License version: 2

Features:

```
subscriber-acct - Per Subscriber Radius Accounting
permanent
subscriber-auth - Per Subscriber Radius Authentication
permanent
subscriber-addr - Address Pool Assignment
permanent
subscriber-vlan - Dynamic Auto-sensed Vlan
permanent
subscriber-ip   - Dynamic and Static IP
permanent
```

Meaning

The output shows a list of the license usage and a list of the licenses installed on the device. Verify the following information:

- Each license is present. Licenses are listed in ascending alphanumeric order by license ID.
- The state of each license is permanent.

A state of `invalid` indicates that the license key is not a valid license key. Either it was entered incorrectly or it is not valid for the specific device.

- The feature for each license is the expected feature. The features enabled are listed by license. An all-inclusive license has all features listed.
- All configured features have the required licenses installed. The Licenses needed column must show that no licenses are required.

Displaying License Usage

IN THIS SECTION

Purpose | 396

Action | 396

Meaning | 397

Purpose

Verify that the licenses fully cover the feature configuration on the device.

Action

From the CLI, enter the `show system license usage` command.

Sample Output

command-name

```
user@host> show system license usage
      Licenses  Licenses  Licenses  Expiry
Feature name  used    installed  needed
subscriber-addr      1         0         1  29 days
scale-subscriber      0        1000         0  permanent
scale-l2tp            0        1000         0  permanent
scale-mobile-ip       0        1000         0  permanent
```

Meaning

The output shows any licenses installed on the device and how they are used. Verify the following information:

- Any configured licenses appear in the output. The output lists features in ascending alphabetical order by license name. The number of licenses appears in the third column. Verify that you have installed the appropriate number of licenses.
- The number of licenses used matches the number of configured features. If a licensed feature is configured, the feature is considered used. The sample output shows that the subscriber address pooling feature is configured.
- A license is installed on the device for each configured feature. For every feature configured that does not have a license, one license is needed.

For example, the sample output shows that the subscriber address feature is configured but that the license for the feature has not yet been installed. The license must be installed within the remaining grace period to be in compliance.

Saving License Keys (CLI)

To save the licenses installed on a device:

From operational mode, do one of the following tasks

- To save the installed license keys to a file or URL, enter the following command:

```
user@host> request system license save filename | url
```

For example, the following command saves the installed license keys to a file named **license.config**:

```
user@host> request system license save license.config
```

- To output installed license keys to the terminal, enter the following command:

```
user@host> request system license save terminal
```


show system license

IN THIS SECTION

- [Syntax | 398](#)
- [Description | 398](#)
- [Options | 398](#)
- [Required Privilege Level | 399](#)
- [Output Fields | 399](#)
- [Sample Output | 400](#)
- [Release Information | 410](#)

Syntax

```
show system license
<brief | detail | installed | key-content filename | keys | usage>
```

Description

Display licenses and information about how they are used.

Options

brief	Display brief output (default).
detail	Display detailed output.
installed	(Optional) Display installed licenses only.
key-content <i>filename</i>	(Optional) Display license key contents of the specified filename.
keys	(Optional) Display a list of license keys. Use this information to verify that each expected license key is present.
usage	(Optional) Display the state of licensed features.

Required Privilege Level

maintenance

Output Fields

Table 151 on page 399 lists the output fields for the `show system license` command. Output fields are listed in the approximate order in which they appear.

Table 151: `show system license` Output Fields

Field Name	Field Description
Feature name	Name assigned to the configured feature. You use this information to verify that all the features for which you installed licenses are present.
Licenses used	<p>Number of licenses used by a router or switch. You use this information to verify that the number of licenses used matches the number configured. If a licensed feature is configured, the feature is considered used.</p> <p>In Junos OS Release 10.1 and later, the <code>Licenses used</code> column displays the actual usage count based on the number of active sessions or connections as reported by the corresponding feature daemons. This is applicable for scalable license-based features such as Subscriber Access (<code>scale-subscriber</code>), L2TP (<code>scale-l2tp</code>), Mobile IP (<code>scale-mobile-ip</code>), and so on.</p>

Table 151: show system license Output Fields (Continued)

Field Name	Field Description
Licenses installed	<p>Information about the installed license key:</p> <ul style="list-style-type: none"> • License identifier—Identifier associated with a license key. • State—State of the license key: valid or invalid. An invalid state indicates that the key was entered incorrectly or is not valid for the specific device. • License version—Version of a license. The version indicates how the license is validated, the type of signature, and the signer of the license key. • Customer ID—Name of the customer license is for. Feature added as of Junos OS Release 15.1 for data center customers (for example QFX Series platform users). • Valid for device—Device that can use a license key. • Group defined—Group membership of a device. • Features—Feature associated with a license, such as data link switching (DLSw).
Licenses needed	Number of licenses required for features being used but not yet properly licensed.
Expiry	Amount of time left within the grace period before a license is required for a feature being used.

Sample Output**show system license (Virtual devices such as vMX and vSRX)**

```
user@host> show system license
```

```
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
VMX-SCALE	0	1	0	permanent
VMX-BANDWIDTH	0	130000	0	permanent
mobile-next-DPI-base	0	1000	0	permanent
mobile-next-policy-prepaid-scaling	0	1000	0	permanent

mobile-next-http-app-scaling	0	1000	0	permanent
mobile-next-scaling	0	1000	0	permanent
logical-system	0	1	0	permanent
ax411-wlan-ap	0	2	0	permanent
dynamic-vpn	0	2	0	permanent
scale-mobile-ip	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-subscriber	0	64010	0	permanent

Licenses installed:

License identifier: RMS818090001

License version: 1

Software Serial Number: AID000000001

Customer ID: LABJuniperTest

License count: 1

Features:

VMX-SCALE - Max scale supported by the VMX

date-based, 2017-03-15 05:30:00 IST - 2017-05-14 05:30:00 IST

License identifier: RMS818020001

License version: 1

Software Serial Number: AID000000001

Customer ID: vMX-JuniperNetworks

License count: 1

Features:

VMX-SCALE - Max scale supported by the VMX

permanent

...

show system license

user@host> **show system license**

License usage:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	2	2	0	permanent
subscriber-authentication	1	2	0	permanent
subscriber-address-assignment	2	2	0	permanent
subscriber-vlan	2	2	0	permanent
subscriber-ip	0	2	0	permanent

scale-subscriber	2	3	0	permanent
scale-l2tp	4	5	0	permanent
scale-mobile-ip	1	2	0	permanent

Licenses installed:

License identifier: XXXXXXXXXX

License version: 2

Customer ID: ACME CORPORATIOM

Features:

subscriber-accounting - Per Subscriber Radius Accounting
permanent

subscriber-authentication - Per Subscriber Radius Authentication
permanent

subscriber-address-assignment - Radius/SRC Address Pool Assignment
permanent

subscriber-vlan - Dynamic Auto-sensed Vlan
permanent

subscriber-ip - Dynamic and Static IP
permanent

show system license installed

```
user@host> show system license installed
```

License identifier: XXXXXXXXXX

License version: 2

Features:

subscriber-accounting - Per Subscriber Radius Accounting
permanent

subscriber-authentication - Per Subscriber Radius Authentication
permanent

subscriber-address-assignment - Radius/SRC Address Pool Assignment
permanent

subscriber-vlan - Dynamic Auto-sensed Vlan
permanent

subscriber-ip - Dynamic and Static IP
permanent

show system license keys

```
user@host> show system license keys
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXX
```

show system license usage

```
user@host> show system license usage
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
subscriber-accounting	2	2	0	permanent
subscriber-authentication	1	2	0	permanent
subscriber-address-assignment	2	2	0	permanent
subscriber-vlan	2	2	0	permanent
subscriber-ip	0	2	0	permanent
scale-subscriber	2	3	0	permanent
scale-l2tp	4	5	0	permanent
scale-mobile-ip	1	2	0	permanent

show system license (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

```
user@host> show system license
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
MX104-2x10Gig-port-0-1	0	1	0	permanent

```

Licenses installed:
  License identifier: XXXXXXXXXXXX
  License version: 2
```

```
Features:
  MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
    permanent
```

show system license installed (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

```
user@host > show system license installed
License identifier: XXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
    permanent
```

show system license keys (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

```
user@host > show system license keys

XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
          XXXXXX XXXX
```

show system license usage (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

```
user@host > show system license usage
```

Feature name	Licenses		Licenses needed	Expiry
	used	installed		
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent

scale-mobile-ip	0	1000	0	permanent
MX104-2x10Gig-port-0-1	0	1	0	permanent

show system license (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

```
user@host > show system license
License usage:

Feature name          Licenses used  Licenses installed  Licenses needed  Expiry
scale-subscriber      0             1000                0                permanent
scale-l2tp            0             1000                0                permanent
scale-mobile-ip       0             1000                0                permanent
MX104-2x10Gig-port-0-1 0              1                   0                permanent
MX104-2x10Gig-port-2-3 0              1                   0                permanent

Licenses installed:
License identifier: XXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
    permanent

License identifier: XXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade
    permanent
```

show system license installed (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

```
user@host > show system license installed
License identifier: XXXXXXXXXX
License version: 2
Features:
```



```
MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
permanent
```

```
License identifier: XXXXXXXXXX
```

```
License version: 2
```

```
Features:
```

```
MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade
permanent
```

show system license keys (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

```
user@host > show system license keys
```

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXXXX XXXX
```

```
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX
XXXXXXXXXX XXXX
```

show system license usage (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

```
user@host > show system license usage
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
MX104-2x10Gig-port-0-1	0	1	0	permanent
MX104-2x10Gig-port-2-3	0	1	0	permanent

show system license (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

```
user@host > show system license
```

License usage:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
MX104-2x10Gig-port-0-1	0	1	0	permanent
MX104-2x10Gig-port-2-3	0	1	0	permanent

Licenses installed:

License identifier: XXXXXXXXXX

License version: 2

Features:

MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
permanent

MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade
permanent

show system license installed (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

```
user@host > show system license installed
```

License identifier: XXXXXXXXXX

License version: 2

Features:

MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade
permanent

MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade
permanent

show system license keys (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

```
user@host > show system license keys

XXXXXXXXX  xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx x
```

show system license usage (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

```
user@host > show system license usage
```

	Licenses used	Licenses installed	Licenses needed	Expiry
Feature name				
scale-subscriber	0	1000	0	permanent
scale-l2tp	0	1000	0	permanent
scale-mobile-ip	0	1000	0	permanent
MX104-2x10Gig-port-0-1	0	1	0	permanent
MX104-2x10Gig-port-2-3	0	1	0	permanent

show system license (QFX Series)

```
user@switch> show system license
License usage:
          Licenses  Licenses  Licenses  Expiry
Feature name    used   installed   needed
qfx-edge-fab     1         1         1   permanent
Licenses installed:
License identifier: JUNOS417988
License version: 1
Features:
  qfx-edge-fab -      QFX3000 Series QF/Node feature license
                  permanent
```

show system license (QFX5110 Switch with Disaggregated Feature License)

```

user@switch> show system license
License usage:

```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
bgp	0	1	0	2017-07-05 00:00:00 UTC
isis	0	1	0	2017-07-05 00:00:00 UTC
vxlan	0	1	0	2017-07-05 00:00:00 UTC
ovsdb	0	1	0	2017-07-05 00:00:00 UTC
jbs1	0	1	0	2017-07-02 00:00:00 UTC
upgrade1	0	1	0	2017-07-05 00:00:00 UTC

```

Licenses installed:
License identifier: JUNOS797095
License version: 4
Software Serial Number: 91730A00223925
Customer ID: Juniper
Features:
  JUNOS-BASE-SERVICES-CLASS-1 - QFX Junos Base Services license for Class 1 HW
    date-based, 2016-07-01 00:00:00 UTC - 2017-07-02 00:00:00 UTC

License identifier: JUNOS797646
License version: 4
Software Serial Number: 91730A00224207
Customer ID: Juniper
Features:
  CLASS-1-JUNOS-BASE-ADVANCED-UPGRADE - Class 1 Junos Base to Advanced Services Upgrade
    date-based, 2016-07-04 00:00:00 UTC - 2017-07-05 00:00:00 UTC

{master:0}

```

show system license key-content srx_1year_sub.lic

```

License Key Content:
License Id: LICENSE-1
License version: 4
Valid for device: CW2716AF0740
Features:

```

```
idp-sig          - IDP Signature
                  date-based, 2016-07-03 00:00:00 GMT - 2017-07-03 00:00:00 GMT
```

Release Information

Command introduced before Junos OS Release 7.4.

Customer ID added to output of data center users in Junos OS Release 15.1.

Corrected output for duration of license added in Junos OS Release 17.4R1.

show system license (View)

IN THIS SECTION

- [Syntax | 410](#)
- [Description | 410](#)
- [Options | 410](#)
- [Required Privilege Level | 411](#)
- [Output Fields | 411](#)
- [Sample Output | 412](#)
- [Release Information | 414](#)

Syntax

```
show system license
<installed | keys | status | usage>
```

Description

Display licenses and information about how licenses are used.

Options

none Display all license information.

- installed** (Optional) Display installed licenses only.
- keys** (Optional) Display a list of license keys. Use this information to verify that each expected license key is present.
- status** (Optional) Display license status for a specified logical system or for all logical systems.
- usage** (Optional) Display the state of licensed features.

Required Privilege Level

view

Output Fields

Table 152 on page 411 lists the output fields for the `show system license` command. Output fields are listed in the approximate order in which they appear.

Table 152: show system license Output Fields

Field Name	Field Description
Feature name	Name assigned to the configured feature. You use this information to verify that all the features for which you installed licenses are present.
Licenses used	Number of licenses used by the device. You use this information to verify that the number of licenses used matches the number configured. If a licensed feature is configured, the feature is considered used.
Licenses installed	Information about the installed license key: <ul style="list-style-type: none"> License identifier—Identifier associated with a license key. License version—Version of a license. The version indicates how the license is validated, the type of signature, and the signer of the license key. Valid for device—Device that can use a license key. Features—Feature associated with a license.

Table 152: show system license Output Fields (Continued)

Field Name	Field Description
Licenses needed	Number of licenses required for features being used but not yet properly licensed.
Expiry	Time remaining in the grace period before a license is required for a feature being used.
Logical system license status	Displays whether a license is enabled for a logical system.

Sample Output**show system license**

```
user@host> show system license
```

```
License usage:
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
av_key_kaspersky_engine	1	1	0	2012-03-30 01:00:00 IST
wf_key_surfcontrol_cpa	0	1	0	2012-03-30 01:00:00 IST
dynamic-vpn	0	1	0	permanent
ax411-wlan-ap	0	2	0	permanent

```
Licenses installed:
```

```
License identifier: JUNOS301998
```

```
License version: 2
```

```
Valid for device: AG4909AA0080
```

```
Features:
```

```
av_key_kaspersky_engine - Kaspersky AV
```

```
date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST
```

```
License identifier: JUNOS302000
```

```
License version: 2
```

```
Valid for device: AG4909AA0080
```

```
Features:
```

```
wf_key_surfcontrol_cpa - Web Filtering
date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST
```

show system license installed

```
user@host> show system license installed

License identifier: JUNOS301998
License version: 2
Valid for device: AG4909AA0080
Features:
  av_key_kaspersky_engine - Kaspersky AV
    date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST

License identifier: JUNOS302000
License version: 2
Valid for device: AG4909AA0080
Features:
  wf_key_surfcontrol_cpa - Web Filtering
    date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST
```

show system license keys

```
user@host> show system license keys

XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx xxx
```

show system license usage

```
user@host> show system license usage
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
av_key_kaspersky_engine	1	1	0	2012-03-30 01:00:00 IST
wf_key_surfcontrol_cpa	0	1	0	2012-03-30 01:00:00 IST

dynamic-vpn	0	1	0	permanent
ax411-wlan-ap	0	2	0	permanent

show system license status logical-system all

```
user@host> show system license status logical-system
all
Logical system license status:

logical system name      license status
root-logical-system     enabled
LSYS0                   enabled
LSYS1                   enabled
LSYS2                   enabled
```

Release Information

Command introduced in Junos OS Release 9.5. Logical system status option added in Junos OS Release 11.2.

SEE ALSO

| [Adding New Licenses \(CLI Procedure\)](#)

traceoptions (System License)

IN THIS SECTION

- [Syntax | 415](#)
- [Hierarchy Level | 415](#)
- [Description | 415](#)
- [Options | 415](#)
- [Required Privilege Level | 416](#)
- [Release Information | 416](#)

Syntax

```
traceoptions {
  file {
    filename;
    files number;
    match regular-expression;
    size maximum-file-size;
    (world-readable | no-world-readable);
  }
  flag flag;
  no-remote-trace;
}
```

Hierarchy Level

[edit system license]

Description

Set trace options for licenses.

Options

file	Configure the trace file information.
<i>filename</i>	Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log . By default, the name of the file is the name of the process being traced.
files <i>number</i>	<p>Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten.</p> <p>If you specify a maximum number of files, you also must specify a maximum file size with the size <i>maximum file-size</i> option.</p> <ul style="list-style-type: none">• Range: 2 through 1000 files

	<ul style="list-style-type: none"> • Default: 10 files
match <i>regular-expression</i>	Refine the output to include lines that contain the regular expression.
size <i>size</i>	Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the <i>files number</i> option. <ul style="list-style-type: none"> • Range: 10 KB through 1 GB • Default: 128 KB
world-readable no-world-readable	By default, log files can be accessed only by the user who configures the tracing operation. The world-readable option enables any user to read the file. To explicitly set the default behavior, use the no-world-readable option.
flag <i>flag</i>	Specify which tracing operation to perform. To specify more than one tracing operation, include multiple <i>flag</i> statements. You can include the following flags. <ul style="list-style-type: none"> • all—Trace all operations. • config—Trace license configuration processing. • events—Trace licensing events and their processing.
no-remote-trace	Disable the remote tracing.

Required Privilege Level

trace—To view this statement in the configuration.

trace-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 8.5.

request system license add

IN THIS SECTION

- [Syntax | 417](#)
- [Description | 417](#)
- [Options | 417](#)
- [Additional Information | 417](#)
- [Required Privilege Level | 418](#)
- [Output Fields | 418](#)
- [Sample Output | 418](#)
- [Release Information | 419](#)

Syntax

```
request system license add (filename | terminal)
```

Description

Adding a license key to the Junos OS devices to activate the feature.

Starting in Junos OS Release 18.3R1, the `display xml rpc` CLI option is supported for `request system license add` and `request system license save` commands while installing licenses on Juniper Networks devices.

Options

filename License key from a file or URL. Specify the filename or the URL where the key is located.

terminal License key from the terminal.

Additional Information

The `| display xml rpc` filter returns “xml rpc equivalent of this command is not available,” the following RPC is supported for license installation:

The following RPC is supported for license installation:

```
<rpc>
<request-license-add>
<key-data> key </key-data>
</request-license-add>
</rpc>
```

Where *key-data* is the license key data.

```
<rpc>
<request-license-add>
<filename> key-file </filename>
</request-license-add>
</rpc>
```

Where *source* is the URL of the source license key file.

Required Privilege Level

maintenance

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request system license add

```
user@host> request system license add terminal
XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
          xxxxxx xxxxxx xxx
XXXXXXXXXX: successfully added
add license complete (no errors)
```

Release Information

Command introduced before Junos OS Release 7.4.

Added additional information section on XML RPC in Junos OS Release 17.4.

request system license save

IN THIS SECTION

- [Syntax | 419](#)
- [Description | 419](#)
- [Options | 419](#)
- [Additional Information | 420](#)
- [Required Privilege Level | 420](#)
- [Output Fields | 420](#)
- [Sample Output | 420](#)
- [Release Information | 420](#)

Syntax

```
request system license save (filename | terminal)
```

Description

Save installed license keys to a file or URL.

Starting in Junos OS Release 18.3R1, the `display xml rpc` CLI option is supported for `request system license add` and `request system license save` commands while installing licenses on Juniper Networks devices.

Options

filename License key from a file or URL. Specify the filename or the URL where the key is located.

terminal License key from the terminal.

Additional Information

The following RPC is supported for saving installed license keys to a file or URL:

```
<rpc>
<request-license-save>
<filename>destination</filename>
</request-license-save>
</rpc>
```

Where *destination* is the URL of the destination license key file.

Required Privilege Level

maintenance

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request system license save

```
user@host> request system license save ftp://user@host/license.conf
```

Release Information

Command introduced before Junos OS Release 7.4.

Added additional information section on XML RPC in Junos OS Release 17.4.

request system license update

IN THIS SECTION

- [Syntax | 421](#)
- [Description | 421](#)

- Options | 421
- Required Privilege Level | 421
- Output Fields | 421
- Sample Output | 422
- Release Information | 422

Syntax

```
request system license update
```

Description

Starts autoupdating license keys from the license portal.

- The **request system license update** command always uses the default Juniper license server: <https://ae1.juniper.net/>.
- The **request system license update** command is supported only on SRX, vSRX, and QFX Series devices.

The products supported by the [Juniper Agile Licensing](#) (JAL) portal includes: QFX series, SRX Series, EX Series, NFX, vBNG, vMX, vSRX, and ACX. For other Juniper products (SPACE, JSA, SBR Carrier, Screen OS and so on) access the [License Management System](#) (LMS).

Options

trial—Immediately updates trial license keys from the license portal.

Required Privilege Level

maintenance

Output Fields

When you enter this command, you are provided feedback on the status of your request.

Sample Output

request system license update

```
user@host> request system license update
```

Trying to update license keys from https://ae1.juniper.net has been sent, use show system license to check status.

request system license update trial

```
user@host> request system license update trial
```

Request to automatically update trial license keys from https://ae1.juniper.net has been sent, use show system license to check status.

Release Information

Command introduced in Junos OS Release 9.5.

request system license delete

IN THIS SECTION

- [Syntax | 422](#)
- [Description | 423](#)
- [Options | 423](#)
- [Required Privilege Level | 423](#)
- [Release Information | 423](#)

Syntax

```
request system license delete ( license-identifier | license-identifier-list [ licenseid001
licenseid002 licenseid003 ] | all )
```

Description

Delete a license key. You can choose to delete one license at a time, all licenses at once, or a list of license identifiers enclosed in brackets.

Options

- license-identifier* Text string that uniquely identifies a license key.
- `license-identifier-list [licenseid001 licenseid002 licenseid003...]` Delete multiple license identifiers as a list enclosed in brackets.
- `all` Delete all licenses on the device.

Required Privilege Level

maintenance

Release Information

Command introduced before Junos OS Release 7.4.
Option `license-identifier-list` introduced in Junos OS Release 13.1.

license

IN THIS SECTION

●

Syntax | 424

●

Hierarchy Level | 424

●

Description | 424

●

Options | 424

●

Required Privilege Level | 425

●

Release Information | 425

Syntax

```
license {
  autoupdate {
    url url <password password>;
  }
  keys {
    key key
  }
  renew {
    before-expiration number;
    interval interval-hours;
  }
  traceoptions {
    file {
      filename;
      files number;
      match regular-expression;
      size maximum-file-size;
      (world-readable | no-world-readable);
    }
    flag flag;
    no-remote-trace;
  }
}
```

Hierarchy Level

[edit system]

Description

Specify license information for the device.

Options

autoupdate	Autoupdate license keys from license servers.
before-expiration <i>number</i>	License renewal lead time before expiration, in days.

	<ul style="list-style-type: none"> • Range: 0 through 60 days
interval <i>interval-hours</i>	License checking interval, in hours.
	<ul style="list-style-type: none"> • Range: 1 through 336 hours
keys <i>key key</i>	Configure one or more license keys. For example,

```
[edit]
user@device# set system license keys key "key_1"
user@device# set system license keys key "key_2"
user@device# set system license keys key "key_3"
user@device# set system license keys key "key_4"
user@device# commit
commit complete
```

renew	License renewal lead time and checking interval.
url	URL of a license server.

The remaining statements are explained separately. See [CLI Explorer](#).

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 8.5.

Options keys introduced in Junos OS Release 14.1X53-D10.

license-type

IN THIS SECTION

- [Syntax | 426](#)
- [Hierarchy Level | 426](#)
- [Description | 426](#)

- Options | 426
- Required Privilege Level | 426
- Release Information | 426

Syntax

```
license-type license deployment-scope [ deployments ];
```

Hierarchy Level

```
[edit system extensions providersprovider-id]
```

Description

Configure the license type and the scope of SDK application deployment.

Options

license—Type of license. Obtain correct value from the application's provider.

deployment—Scope of SDK application deployment. You can configure a set of deployments. Obtain correct value from the application's provider.

Required Privilege Level

admin—To view this statement in the configuration.

admin-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 11.1.

Release History Table

Release	Description
16.1	Starting in Junos OS Release 16.1, to remove licenses from the configuration, you can use either the delete or deactivate configuration command.