

Licensing Guide

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Licensing Guide

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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.

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About the Documentation

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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.

Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <https://www.juniper.net/books>.

Documentation Conventions

Table 1 on page xii defines notice icons used in this guide.

Table 1: Notice Icons







Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

Table 2 on page xii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none">• To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level.• The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i>>;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [<i>community-ids</i>]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		

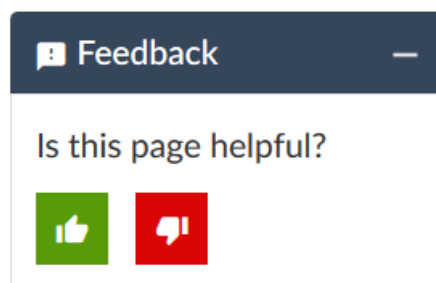
Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback so that we can improve our documentation. You can use either of the following methods:

- Online feedback system—Click TechLibrary Feedback, on the lower right of any page on the [Juniper Networks TechLibrary](#) site, and do one of the following:



- Click the thumbs-up icon if the information on the page was helpful to you.
- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are

covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <https://www.juniper.net/customers/support/>
- Search for known bugs: <https://prsearch.juniper.net/>
- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes: <https://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://entitlementsearch.juniper.net/entitlementsearch/>

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit <https://myjuniper.juniper.net>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <https://support.juniper.net/support/requesting-support/>.

1

PART

Flex Software Subscription Model

[Overview](#) | 2

Overview

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Flex Software Subscription Model

IN THIS SECTION

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- [Getting Started | 3](#)
- [Understanding Subscription Licenses | 4](#)

Flex Software Subscription Model Overview

The Flex Software Subscription 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

As a customer ordering a Juniper Networks product under the Flex Software Subscription 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 Subscription 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.

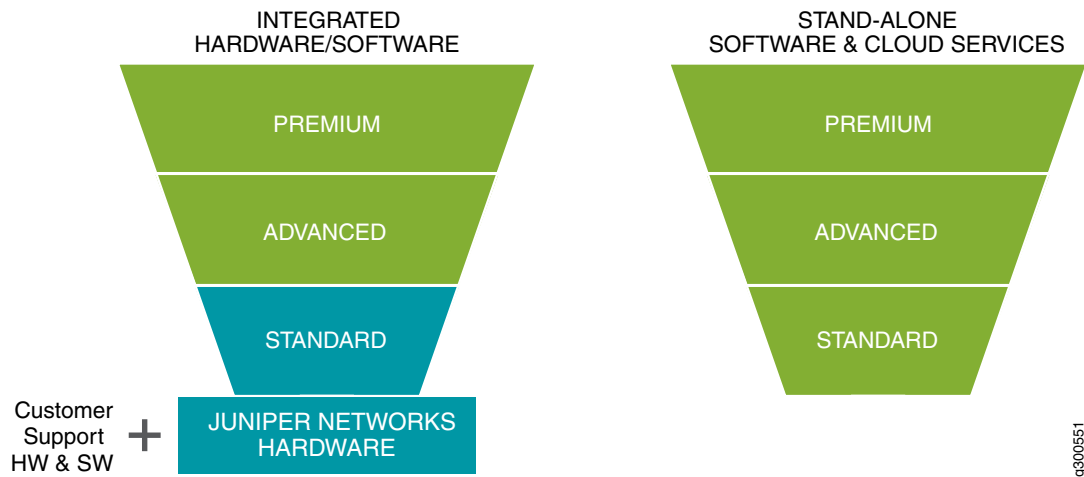
- **Advanced License**

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 Subscription Model



Understanding Subscription Licenses

All advanced and premium licenses are offered as subscriptions under the Flex Software Subscription 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 3 on page 4](#) describes the subscription terms for purchase and number of months to use the license.

Table 3: 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 Subscription Model Support

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The Flex Software Subscription Model supports the following Juniper products:

ACX5448-D and ACX5448-M

Table 4 on page 6 describes the licensing support for the ACX5448-D and ACX5448-M Universal Metro Routers.

Figure 2 on page 6 shows ACX5448-D and ACX5448-M Universal Metro Routers features for Flex Software Subscription Model Three-Tier (standard, advanced, and premium licenses).

Figure 2: ACX5448-D and ACX5448-M

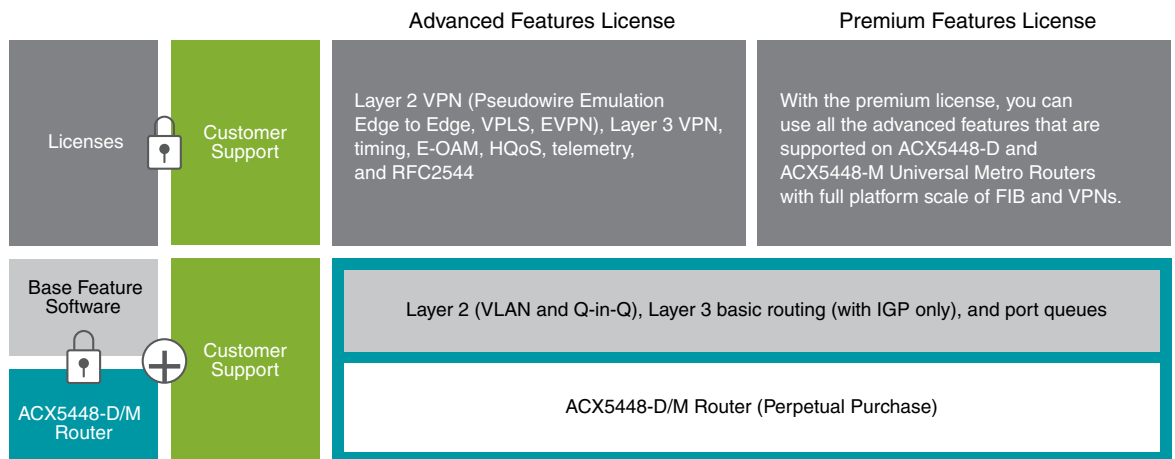


Table 4: Supported Features on ACX5448-D and ACX5448-M

License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Standard license for integrated SKUs	Basic Layer 2 aggregation and Layer 3	Layer 2 (VLAN and Q-in-Q), Layer 3 basic routing (with IGP only), and port queues	Default Layer 2 scale and 8 queues

Table 4: Supported Features on ACX5448-D and ACX5448-M (continued)

License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Advanced license for integrated and advanced SKUs	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	Per 100 Gbps – 256K FIBs, 1K Layer 3 VPNs, full-scale Layer 2 VPN, and MACsec
Premium license for integrated and premium SKUs	Provider edge	With the premium license, you can use all the advanced features that are supported on ACX5448-D and ACX5448-M Universal Metro Routers with full platform scale of FIB and VPNs.	Per 100 Gbps – Full-scale FIB and Layer 2 or Layer 3 VPN supported by platform

For ACX5448-D and ACX5448-M Universal Metro Routers, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

Contrail Enterprise Data Center

[Table 5 on page 8](#) describes licensing support for fabric management on Contrail Enterprise Data Center.

[Figure 3 on page 8](#) shows Contrail Enterprise Data Center features for the Flex Software Subscription Model Three-Tier (standard, advanced, and premium licenses).

Figure 3: Contrail Enterprise Multicloud

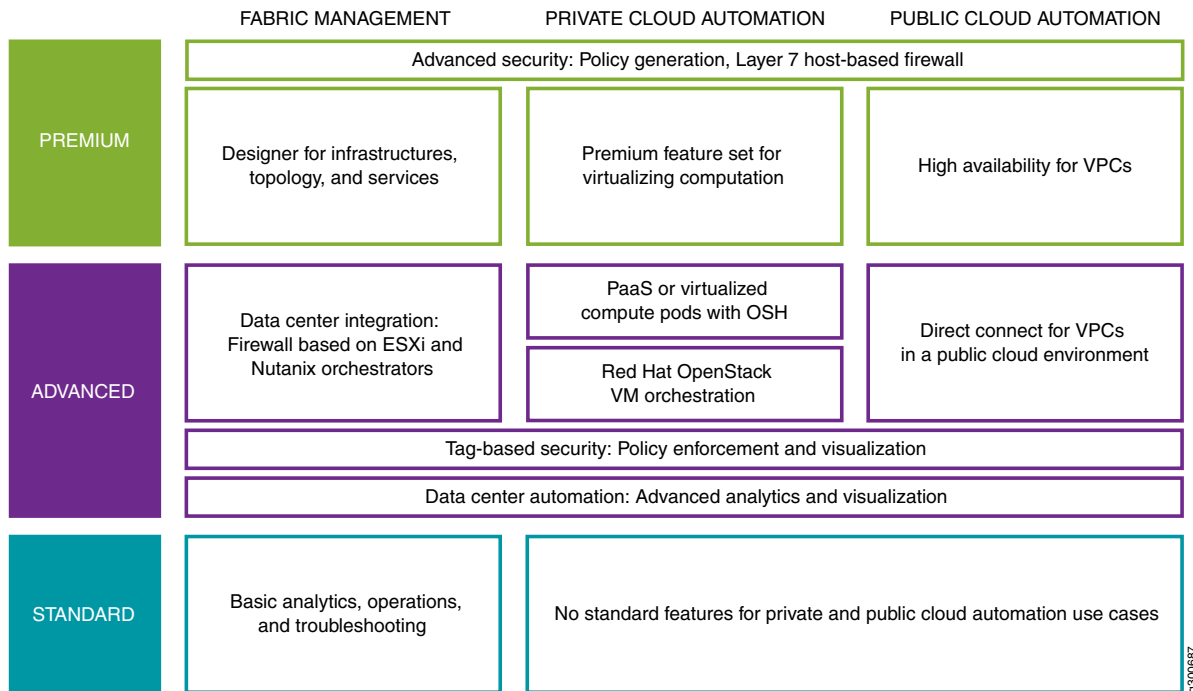


Table 5: Supported Features on Fabric Management on Contrail Enterprise Data Center

Contrail Enterprise Data Center License Model	Detailed Features for Fabric Management
Standard	Fabric management: Basic analytics, operations, and troubleshooting
Advanced	Tag-based security: Policy enforcement and visualization Data center integration: Firewall based on ESXi and Nutanix orchestrators Data center automation: Advanced analytics and visualization Fabric management: Basic analytics, operations, and troubleshooting

Table 5: Supported Features on Fabric Management on Contrail Enterprise Data Center (*continued*)

Contrail Enterprise Data Center License Model	Detailed Features for Fabric Management
Premium	<p>Designer for infrastructure, topology, and services</p> <p>Advanced security: Policy generation, Layer 7 host-based firewall</p> <p>Data center integration: Firewall based on ESXi and Nutanix orchestrators</p> <p>Data center automation: Advanced analytics and visualization</p> <p>Fabric management: Basic analytics, operations, and troubleshooting</p>

For fabric management, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

[Table 6 on page 9](#) describes licensing support for private cloud automation on Contrail Enterprise Data Center.

Table 6: Supported Features on Private Cloud Automation on Contrail Enterprise Data Center

Contrail Enterprise Data Center License Model	Detailed Features for Private Cloud Automation
Advanced	<p>Tag-based security: Policy enforcement and visualization</p> <p>Data center automation: Advanced analytics and visualization</p> <p>Red Hat OpenStack VM orchestration</p> <p>PaaS or virtualized compute pods with OSH</p>
Premium	<p>Advanced security: Policy generation, Layer 7 host-based firewall</p> <p>PaaS or virtualized compute pods with OSH</p> <p>Premium feature set for virtualizing computation</p> <p>Tag-based security: Policy enforcement and visualization</p> <p>Data center automation: Advanced analytics and visualization</p> <p>Red Hat OpenStack VM orchestration</p>

For private cloud automation, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

Table 7 on page 10 describes licensing support for public cloud automation on Contrail Enterprise Data Center.

Table 7: Supported Features on Public Cloud Automation on Contrail Enterprise Data Center

Contrail Enterprise Data Center License Model	Detailed Features for Public Cloud Automation
Advanced	<p>Tag-based security: Policy enforcement and visualization</p> <p>Data center automation: Advanced analytics and visualization</p> <p>Direct connect for VPCs in a public cloud environment</p>
Premium	<p>Advanced security: Policy generation, Layer 7 host-based firewall</p> <p>Direct connect for VPCs in a public cloud environment</p> <p>High availability for VPCs</p> <p>Tag-based security: Policy enforcement and visualization</p>

For public cloud automation, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

cRPD

Table 8 on page 11 describes the licensing support with use case examples for the containerized routing protocol process (cRPD).

cRPD supports 1 year and 3 years subscription models only.

Figure 4 on page 10 shows cRPD features for the standard license.

Figure 4: cRPD

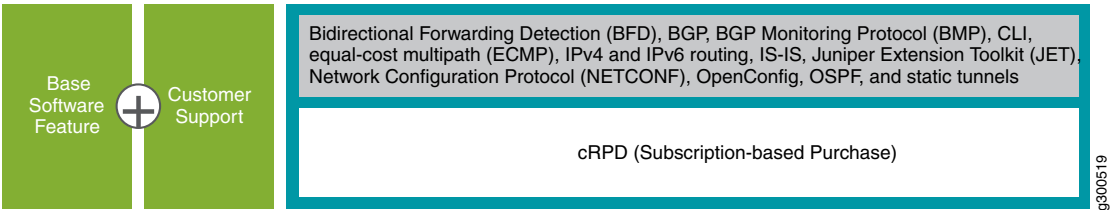


Table 8: Supported Features on cRPD

License Model	cRPD SKUs	Use Case Examples or Solutions	Detailed Features	Scale
Standard license	S-CRPD-S-1 S-CRPD-S-3 S-CRPD-S-B100-1 S-CRPD-S-B100-3 S-CRPD-S-B1000-1 S-CRPD-S-B1000-3	Host based routing, Route reflector, Layer 3 routing, and Software for Open Networking in the Cloud (SONiC)	Bidirectional Forwarding Detection (BFD), BGP, BGP Monitoring Protocol (BMP), Junos OS CLI support, equal-cost multipath (ECMP), IPv4 and IPv6 routing, IS-IS, JET for Programmable RPD, Network Configuration Protocol (NETCONF), and OSPF.	8M RIBs and 64 BGP neighbors

Choose base licenses based on your use cases and segments. The following information includes sample segments and use cases for the cRPD:

- The cloud, enterprise, and service provider network segments require the standard license for host-based routing, route reflector, Layer 3 routing, and Software for Open Networking in the Cloud (SONiC).

Contrail Service Orchestration

[Table 9 on page 12](#) describes the standard and advance license model support with use case examples for the Contrail Service Orchestration (CSO) software. [Table 10 on page 13](#) lists the supported devices categorized into device classes.

[Figure 5 on page 12](#) shows CSO features for the standard and advanced licenses.

Figure 5: Contrail Service Orchestration

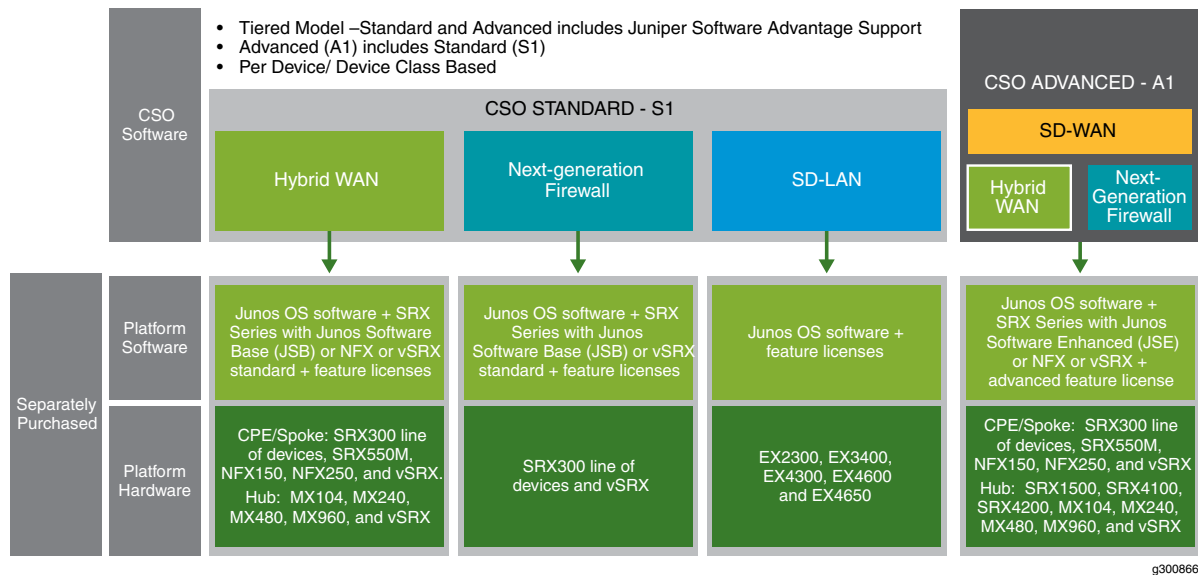


Table 9 on page 12 describes the Flex Software Subscription Model support with use case examples for the Contrail Service Orchestration (CSO) software.

Table 9: CSO SKUs for Standard and Advanced License Model

License Model	Use Case Examples or Solutions	Features Supported
Standard license	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 10 on page 13.</p>

Table 9: CSO SKUs for Standard and Advanced License Model (*continued*)

License Model	Use Case Examples or Solutions	Features Supported
Advanced license	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 10 on page 13.</p>

CSO supports various Juniper Networks devices. [Table 10 on page 13](#) lists the supported devices categorized into device classes.

Table 10: 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) 	<p>Next-Generation Firewall Devices</p> <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) 	<p>Next-Generation Firewall Devices</p> <ul style="list-style-type: none"> ● Next-Generation Firewall services with Junos Software Enhanced (JSE) vSRX (5 vCPUs)

Table 10: 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

MPC10E Line Cards

Table 11 on page 15 describes the licensing support with use case examples for the MPC10E line cards.

Figure 6 on page 14 shows MPC10E line cards features for the Three-Tier (standard, advanced, and premium licenses).

Figure 6: MPC10E Line Cards

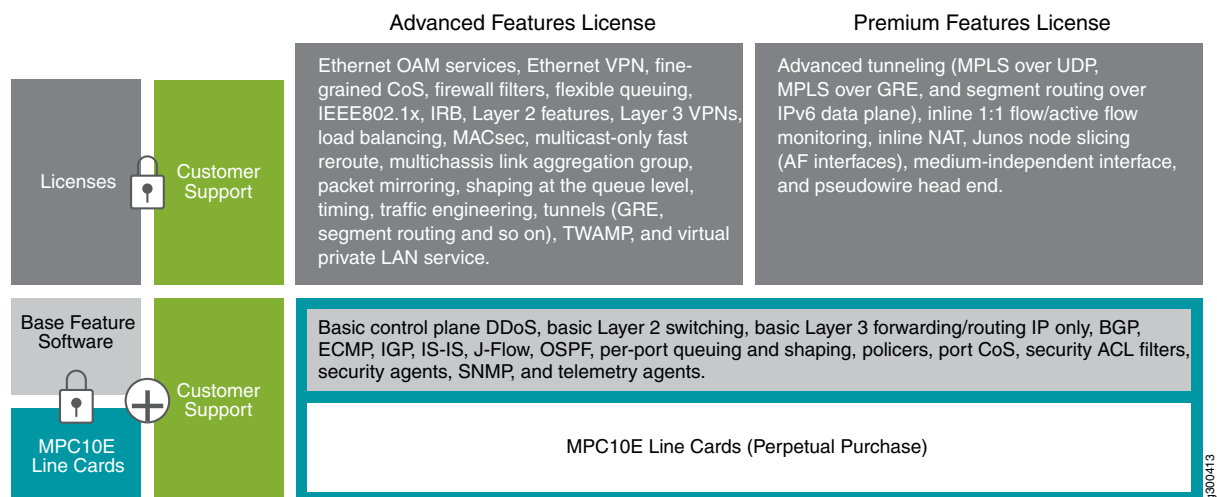


Table 11: Supported Features on MPC10E line cards

MPC10E Line Cards License Model	Use Case Examples or Solutions	Detailed Features	Scale
Standard hardware and software platform	Basic switching and IP routing	Basic control plane DDoS, basic Layer 2 switching, basic Layer 3 forwarding/routing IP only, BGP, ECMP, IGP, IS-IS, J-Flow, OSPF, per-port queuing and shaping, policers, port CoS, security ACL filters, security agents, SNMP, and telemetry agents.	128K FIBs, 8 VRFs , and 128K MACs
Advanced	Peering, converged provider/provider edge routers, DCI, IP/label-switching router core, metro aggregation, and business services	Ethernet OAM services, Ethernet VPN, fine-grained CoS, firewall filters, flexible queuing, IEEE802.1x, IRB, Layer 2 features, Layer 3 VPNs, load balancing, MACsec, multicast-only fast reroute, multichassis link aggregation group, packet mirroring, shaping at the queue level, timing, traffic engineering, tunnels (GRE, segment routing and so on), TWAMP, and virtual private LAN service.	4M FIBs, 2K VRFs, 32K L2 VPN circuits, 1M MACs, 128K LSPs, and 8K queues
Premium	Data center WAN edge, advanced business services, telecommunication cloud gateway, and cloud connect gateway	Advanced tunneling (MPLS over UDP, MPLS over GRE, and segment routing over IPv6 data plane), inline 1:1 flow/active flow monitoring, inline NAT, Junos node slicing (AF interfaces), medium-independent interface, and pseudowire head end.	8M+ FIBs, 4K+ VFRs, 256K+ L2 VPN circuits, 1M+ MACs, 256K+ LSPs, and 32K queues

Choose advanced and premium licenses based on your use cases. The following information includes sample segments and use cases for the MPC10E line cards:

- The cloud provider network segment requires the standard license for basic switching and IP routing.
- The cloud provider network segment requires the advanced license for MPLS, Ethernet VPN, fine-grained CoS, and so on.
- The cloud provider network segment requires the premium license for advanced tunneling (MPLS over UDP, MPLS over GRE, and segment routing over IPv6 data plane), Inline NAT, and so on.

For MPC10E Line Cards, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

MX204 Routers

Table 12 on page 16 describes the licensing support with use case examples for the MX204 router.

Figure 7 on page 16 shows MX204 router features for the Three-Tier (standard, advanced, and premium licenses).

Figure 7: MX204 Router

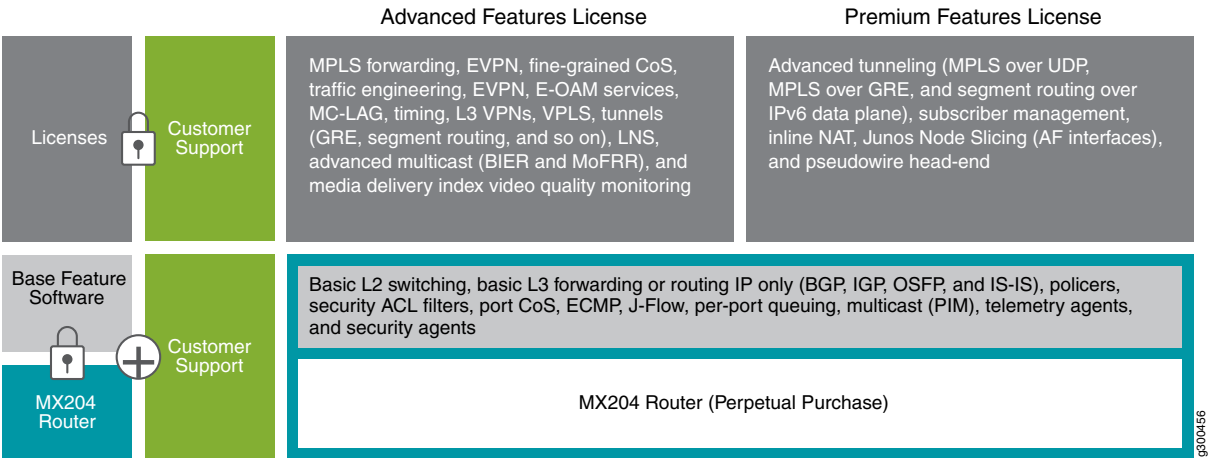


Table 12: Supported Features on MX204 Router

MX204 Router License Model	Use Case Examples or Solutions	Detailed Features	Scale
Standard hardware and software platform	LSR core, basic video transport, and basic route reflector	Basic L2 switching, basic L3 forwarding or routing IP only (BGP, IGP, OSPF, and IS-IS), policers, security ACL filters, port CoS, ECMP, J-Flow, per-port queuing, multicast (PIM), telemetry agents, and security agents	128K FIBs, 8 VRFs, 20M RIBs, and 128K MACs.

Table 12: Supported Features on MX204 Router (*continued*)

MX204 Router License Model	Use Case Examples or Solutions	Detailed Features	Scale
Advanced	Advanced video transport, metro Ethernet aggregate, mobile backhaul, DCI, basic L3 business VPN, peering, basic tunneling, wholesale BNG, advanced route reflector, traffic engineering, and so on	Advanced multicast (BIER and MoFRR), E-OAM services, EVPN, fine-grained CoS, IRB, L3 VPNs, LNS, MC-LAG, media delivery index video quality monitoring, MPLS forwarding, timing, traffic engineering, tunnels (GRE, segment routing, and so on), and VPLS.	4M FIBs, 2K VRFs, 40M RIBs, 1M MACs, 32K L2 VPNs, 128K LSPs, and 32K queues.
Premium	Data center WAN edge, cloud connect gateway business services and residential services, SD-WAN gateway, telecommunication cloud gateway, and so on	Advanced tunneling (MPLS over UDP, MPLS over GRE, and segment routing over IPv6 data plane), subscriber management, inline NAT, Junos Node Slicing (AF interfaces), and pseudowire head-end	8M FIBs, 4K VRFs, 80M RIBs, 1M MACs, 256K L2 VPNs, 256K LSPs, and 32K queues.

Choose advanced and premium licenses based on your use cases and segments. The following information includes sample segments and use cases for the MX204 router:

- The enterprise network segment requires the premium license for data center WAN edge and the advanced license for basic tunneling.
- The service provider network segment requires the premium license for SD-WAN gateway and the advanced license for metro Ethernet aggregate.
- The cloud provider network segment requires the premium license for data center WAN edge and the advanced license for DCI.

For MX204 Router, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

PTX10003

Table 13 on page 18 describes the licensing support for the PTX10003.

Figure 8 on page 18 shows PTX10003 features for the Three-Tier (standard, advanced, and premium licenses).

Figure 8: PTX10003

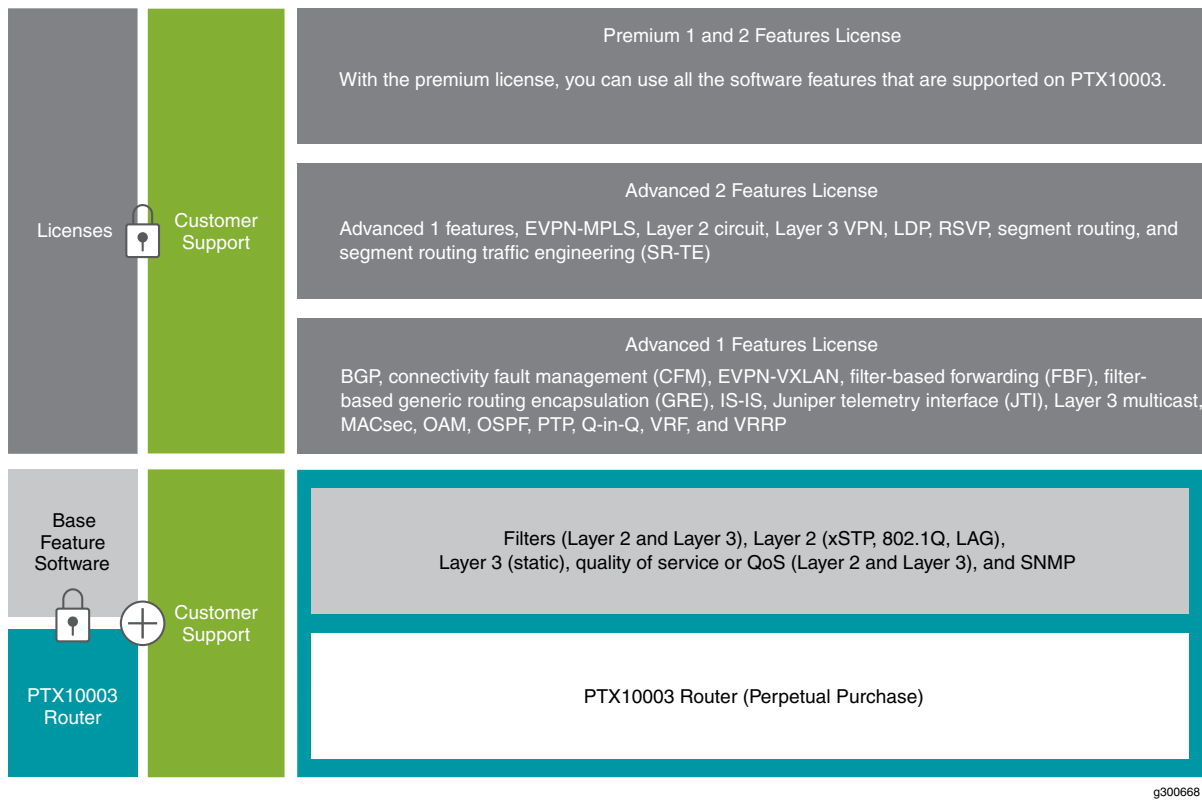


Table 13: Supported Features on PTX10003

PTX10003 License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Standard	Basic Layer 2 switching or basic Layer 3 routing	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	64K FIBs

Table 13: Supported Features on PTX10003 (continued)

PTX10003 License Model	Use Case Examples or Solutions	Detailed Features for Fabric Management	Scale
Advanced	Advanced 1		
	Data center IP spine (cloud and enterprise segment)	BGP, connectivity fault management (CFM), EVPN-VXLAN, filter-based forwarding (FBF), filter-based generic routing encapsulation (GRE), IS-IS, Juniper telemetry interface (JTI), Layer 3 multicast, MACsec, OAM, OSPF, PTP, Q-in-Q, VRF, and VRRP	256K FIBs, 3M RIBs, and 256 VRFs
	Advanced 2		
	Data center interconnect and data center or WAN edge	Advanced 1 features, EVPN-MPLS, Layer 2 circuit, Layer 3 VPN, LDP, RSVP, segment routing, and segment routing traffic engineering (SR-TE)	1M FIBs, 3M RIBs, 1K LSPs, and 1K VRFs
Premium	Premium 1		
	Label switch routing (LSR) and peering	With the premium license, you can use all the software features that are supported on PTX10003.	2M FIBs, 6M RIBs, 32K LSPs, and 1K VRFs
	Premium 2		
	High-scale LSR, IP core, and peering	With the premium license, you can use all the software features that are supported on PTX10003.	2M to 4M FIBs, 60M to 80 M RIBs, 100K+ LSPs, and 1K to 2K VRFs

For PTX10003, the Flex Software Subscription Model supports subscription portability for the cloud, enterprise, and service provider segments.

QFX Switches

QFX switch models that support the Software Subscription Model:

- QFX5120-32C
 - QFX5120-48Y
 - QFX5220-32CD
 - QFX5220-128C
- QFX switch support for QFX5120-48Y consists of Flex optional (QFX5120-48Y-AFI) and Flex required (QFX5120-48Y-AFI2).

Figure 9 on page 20 shows QFX switch features for the Three-Tier (standard, advanced, and premium licenses).

Figure 9: QFX Switch

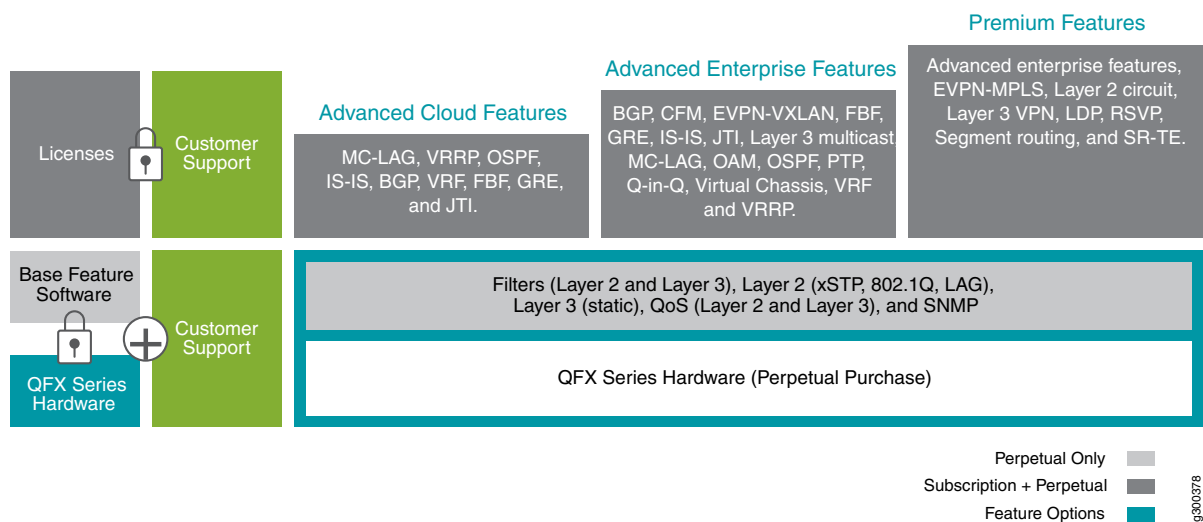


Table 14 on page 20 describes the licensing support with use case examples for the QFX5120, QFX5200, and QFX5220 switches.

Table 14: Supported Features on QFX5120, QFX5200, and QFX5220 switches

QFX Switch License Model	Use Case Examples or Solutions	Detailed Features
Standard license for integrated SKUs (standard hardware and software platform)	Basic Layer 2 switching or basic Layer 3 forwarding	Filters (Layer 2 and Layer 3), Layer 2 (xSTP, 802.1Q, LAG), Layer 3 (static), QoS (Layer 2 and Layer 3), and SNMP

Table 14: Supported Features on QFX5120, QFX5200, and QFX5220 switches (continued)

QFX Switch License Model	Use Case Examples or Solutions	Detailed Features
Advanced license for integrated and advanced SKUs	Data center fabric	Advanced 1: BGP, FBF, GRE, IS-IS, JTI, MC-LAG, OSPF, VRF and VRRP. Advanced 2: BGP, CFM, EVPN-VXLAN, FBF, GRE, IS-IS, JTI, Layer 3 multicast, MC-LAG, OAM, OSPF, PTP, Q-in-Q, Virtual Chassis, VRF and VRRP.
Premium license for integrated and premium SKUs	Data center interconnect or data center edge	MPLS: Advance Enterprise Features, EVPN-MPLS, Layer 2 circuit, Layer 3 VPN, LDP, RSVP, Segment routing, and SR-TE.

QFX switch supports 3-year and 5-year subscription models only.

[Table 15 on page 21](#) describes classification of QFX switch device class and SKUs.

Table 15: QFX switch device class and SKUs

QFX 5000 Series Product Class	QFX Device Models	SKUs
Class 1	QFX5120-48Y-AFO2 QFX5120-48Y-AFI2 QFX5120-48Y-D-AFO2 QFX5120-48Y-D-AFI2	S-QFX5K-C1-A1-3 S-QFX5K-C1-A1-5 S-QFX5K-C1-A2-3 S-QFX5K-C1-A2-5 S-QFX5K-C1-P1-3 S-QFX5K-C1-P1-5
Class 2	QFX5200-32C-L QFX5120-32C-AFO QFX5120-32C-AFI QFX5120-32C-DC-AFO QFX5120-32C-DC-AFI	S-QFX5K-C2-A1-3 S-QFX5K-C2-A1-5 S-QFX5K-C2-A2-3 S-QFX5K-C2-A2-5 S-QFX5K-C2-P1-3 S-QFX5K-C2-P1-5
Class 3	QFX5220-32CD-AFO QFX5220-32CD-AFI QFX5220-32CD-DC-AFO QFX5220-32CD-DC-AFI QFX5220-128C-AFO QFX5220-128C-D-AFO	S-QFX5K-C3-A1-3 S-QFX5K-C3-A1-5 S-QFX5K-C3-A2-3 S-QFX5K-C3-A2-5 S-QFX5K-C3-P1-3 S-QFX5K-C3-P1-5

SRX Series Services Gateways

Flex Software Subscription Model supported on SRX300, SRX550M, SRX1500, SRX4100, SRX4200, SRX4600, SRX5400, SRX5600, and SRX5800 devices.

Figure 10 on page 22 shows SRX Series Services Gateways features for Flex Software Subscription Model Three-Tier (standard, advanced, and premium licenses).

Figure 10: SRX Series Services Gateways

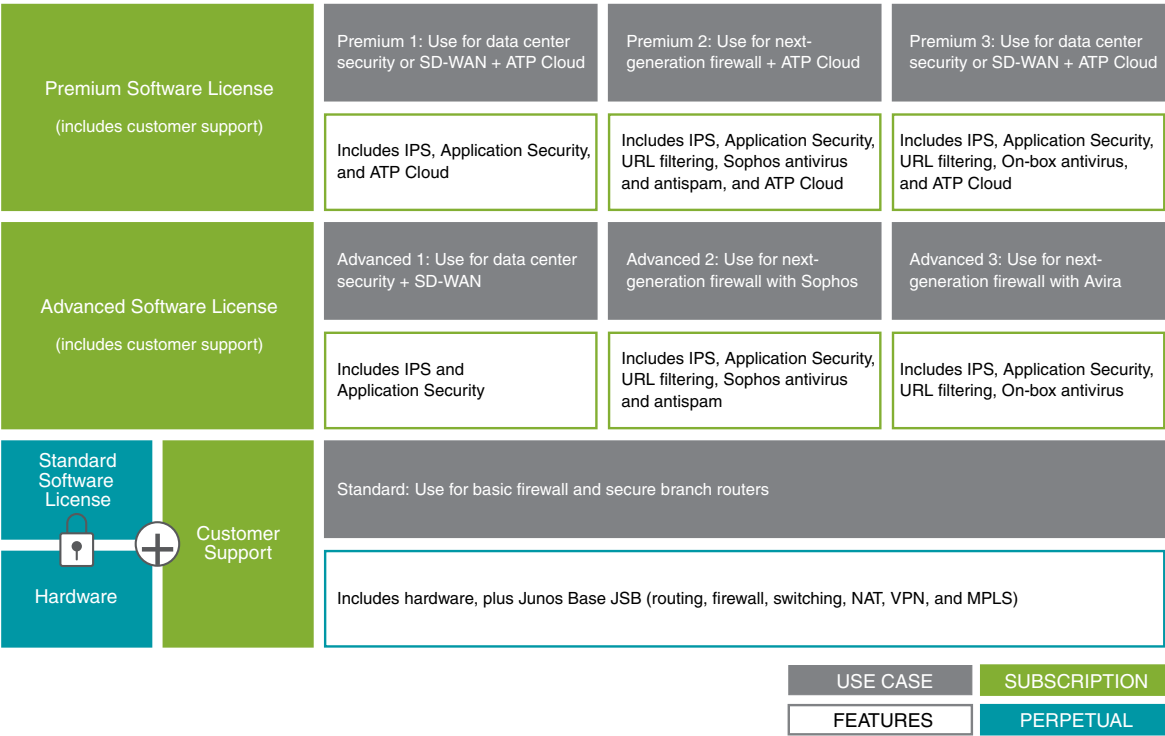


Table 16 on page 22 shows SRX Series Services Gateways features for Flex Software Subscription Model.

Table 16: 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)

Table 16: SRX Series Services Gateways Flex Software Subscription Model (continued)

SRX Series Services Gateways License Model	Use Case Examples or Solutions	Detailed Features
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
	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

Advanced 3 and **Premium 3** license models are not supported on SRX300, SRX320, SRX340, SRX345, and SRX380 devices.

2

PART

Software Licenses

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[Licenses for Network Management | 257](#)

[Licenses for Contrail Service Orchestration | 283](#)

[Licenses for Steel-Belted Radius® Carrier | 293](#)

Overview

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- Download and Activate Your Software | 34
- Managing Licenses | 35

Software License Overview

IN THIS SECTION

- Platforms Supported in the Licensing Guide | 25
- Junos OS Feature Licenses | 26
- License Enforcement | 27
- Junos OS Feature License Keys | 28

Platforms Supported in the Licensing Guide

This guide describes how to install, manage, and monitor licenses on Juniper Networks devices. [Table 17 on page 25](#) shows the platforms supported in the licensing guide.

Table 17: Platforms Supported in the Licensing Guide

Category	Platforms
Juniper Flex Program	ACX5448-D and ACX5448-M, Contrail Enterprise Multicloud, cRPD, Juke Multicloud, MPC10E Line Cards, MX204 Router, PTX10003 QFX5120-32C, QFX5120-48Y, QFX5200-32C-L, QFX5220-32CD, and QFX5220-128C
Routing	cRPD, M Series, MX Series, PTX Series, T Series, and vMX

Table 17: Platforms Supported in the Licensing Guide (*continued*)

Category	Platforms
Security	SRX Series and vSRX
Switching	EX Series, QFX Series, and QFabric System
Network Management	Junos Space, Network and Security Manager (NSM), and J-Web Device Manager
Contrail Service Orchestration	Contrail Service Orchestration (CSO)
Steel-Belted Radius Carrier	Steel-Belted Radius (SBR) or OAC or IMS AAA (formerly Funk)

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 \(CLI\) | 44](#)

[show system license | 47](#)

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

[Adding New Licenses \(CLI Procedure\) | 35](#)

[Deleting License Keys \(CLI\) | 41](#)

[Saving License Keys \(CLI\) | 46](#)

[Verifying Junos OS License Installation \(CLI\) | 44](#)

Junos OS Feature License Keys

IN THIS SECTION

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- [License Management Fields Summary | 28](#)
- [Release-Tied License Keys and Upgrade Licenses on MX Series Routers | 30](#)
- [Licensable Ports on MX5, MX10, and MX40 Routers | 31](#)
- [Port Activation on MX104 Routers | 32](#)

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 xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
          xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
          xxxxxxx xxxxxxx 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 18 on page 28](#).

Table 18: Summary of License Management Fields

Field Name	Definition
Feature Summary	

Table 18: Summary of License Management Fields (*continued*)

Field Name	Definition
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.
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 aborts 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 19 on page 32](#) 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 19: 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 • 1/MIC0	f1—MX5 to MX10 upgrade	Slot 1 and 2 • 1/MIC0 • 1/MIC1
MX10	40G	0x555	Slot 1 and 2 • 1/MIC0 • 1/MIC1	f2—MX10 to MX40 upgrade	Slot 2 and first 2 ports on Slot 0 • 1/MIC1 • First 2 ports on 0/MIC0
MX40	60G	0x554	Slot 1, Slot 2 and first 2 ports on Slot 0 • 1/MIC0 • 1/MIC1 • First 2 ports on 0/MIC0	f3—MX40 to MX80 upgrade	Slot 2 and all ports on Slot 0 • 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 20 on page 33](#).

Table 20: 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 20 on page 33](#) 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 \(CLI\) | 210](#)

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 | 35](#)

Download and Activate Your Software

1. Gather your software serial number, and if activating additional capacity or features, gather your activation codes.

Keep the software serial number in a safe place, as it is needed to identify your installation when you contact Juniper Networks for support. Upon installation, this serial number is visible in your product.

- **Software Serial Number:** The serial number is a unique 14-digit number that Juniper uses to identify your particular software installation. You can find the software serial number in the Software Serial Number Certificate attached to the email that was sent when you ordered your Juniper Networks software.
- **Activation Code:** The 16-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. For the base activation key, gather the software serial number. For additional capacity / feature key(s), gather the software serial number and the activation code(s). 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 need to contact the [Juniper Agile Licensing Portal](#) through the internet as part of the activation sequence.

Managing Licenses

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Adding New Licenses (CLI Procedure)

IN THIS SECTION

- Installing a License Using a Configuration Statement | 36
- Installing a License Using an Operational Command | 40

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 | 36](#)
- [Installing Licenses Using a Configuration File | 37](#)

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"
```

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:

Feature name          Licenses    Licenses    Licenses    Expiry
                     used      installed   needed
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 xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx";
+       }
+   }
```

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
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
--------------	---------------	--------------------	-----------------	--------

```

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

```

Installing a License Using an Operational Command

IN THIS SECTION

- [Adding a License to a Device with a Single Routing Engine | 40](#)
- [Adding a License to a Device with Dual Routing Engines | 41](#)

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 \(CLI\)” on page 44](#).

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 master 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 mastership 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 master Routing Engine, use the **request chassis routing-engine master switch** command to have the backup Routing Engine become the master 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.

SEE ALSO

[Junos OS Feature Licenses | 26](#)

Deleting License Keys (CLI)

IN THIS SECTION

- [Using the Operational Command to Delete Licenses | 41](#)
- [Using a Configuration Command to Delete Licenses | 42](#)

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.

Verifying Junos OS License Installation (CLI)

IN THIS SECTION

- [Displaying Installed Licenses | 44](#)
- [Displaying License Usage | 45](#)

To verify Junos OS license management, perform the following tasks:

Displaying Installed Licenses

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

```
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

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

```
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:

1. 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

Syntax

```
show system license
<installed | key-content filename | keys | revoked-info | usage>
```

Release Information

Command introduced before Junos OS Release 7.4.

Command introduced in Junos OS Release 9.0 for EX Series switches.

Command introduced in Junos OS Release 11.1 for the QFX Series.

Command introduced in Junos OS Release 13.3 for the MX Series 5G Universal Routing Platform.

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.

Description

Display licenses and information about how they are used.

Options

none—Display all license information.

key-content *filename*—(Optional) Display license key contents of the specified filename.

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.

revoked-info—(Optional) Display information about revoked licenses.

usage—(Optional) Display the state of licensed features.

Required Privilege Level

maintenance

List of Sample Output

[show system license \(Virtual devices such as vMX and vSRX\) on page 49](#)

[show system license on page 50](#)

[show system license installed on page 50](#)

[show system license keys on page 51](#)

[show system license usage on page 51](#)

[show system license \(MX104 Routers\) on page 51](#)

[show system license installed \(MX104 Routers\) on page 52](#)

[show system license keys \(MX104 Routers\) on page 52](#)

[show system license usage \(MX104 Routers\) on page 53](#)

[show system license \(MX104 Routers\) on page 53](#)
[show system license installed \(MX104 Routers\) on page 54](#)
[show system license keys \(MX104 Routers\) on page 54](#)
[show system license usage \(MX104 Routers\) on page 54](#)
[show system license \(MX104 Routers\) on page 55](#)
[show system license installed \(MX104 Routers\) on page 55](#)
[show system license keys \(MX104 Routers\) on page 56](#)
[show system license usage \(MX104 Routers\) on page 56](#)
[show system license \(QFX Series\) on page 56](#)
[show system license \(QFX5110 Switch with Disaggregated Feature License\) on page 57](#)
[show system license key-content srx_1year_sub.lic on page 58](#)

Output Fields

Table 21 on page 48 lists the output fields for the **show system license** command. Output fields are listed in the approximate order in which they appear.

Table 21: 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 Licenses used 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 (scale-subscriber), L2TP (scale-l2tp), Mobile IP (scale-mobile-ip), and so on.</p>
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).

Table 21: 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	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:

              Licenses      Licenses      Licenses      Expiry
Feature name      used    installed    needed
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: XXXXXXXXXXXX
License version: 2
Customer ID: ACME CORPORATION
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: XXXXXXXXXXXX
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

```

XXXXXXXXXXXX xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxxxxx 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:

              Licenses      Licenses      Licenses      Expiry
Feature name      used      installed      needed
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 Built-in 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: XXXXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-0-1 - MX104 2X10Gig Built-in 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
```

Licenses	Licenses	Licenses	Expiry	
Feature name	used	installed	needed	
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:				
	Licenses	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
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: XXXXXXXXXXXX				
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: XXXXXXXXXXXX				
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: XXXXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-0-1 - MX104 2X10Gig Built-in Port(xe-2/0/0 & xe-2/0/1) upgrade
    permanent

License identifier: XXXXXXXXXXXX
License version: 2
Features:
  MX104-2x10Gig-port-2-3 - MX104 2X10Gig Built-in 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 xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxx

XXXXXXXXXX xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx xxxxxxxx
          xxxxxxxx xxxxx
```

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**

	Licenses	Licenses	Licenses	Expiry	
Feature name		used	installed	needed	
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      Licenses      Licenses      Expiry
                     used       installed     needed
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: XXXXXXXXXXXX
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 Built-in Port(xe-2/0/0 & xe-2/0/1) upgrade
                           permanent
  MX104-2x10Gig-port-2-3 - MX104 2X10Gig Built-in 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  XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX
           XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX
           XXXXXXX XXXXXXX 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	Licenses	Licenses	Expiry	
Feature name		used	installed	needed
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      Licenses      Licenses      Expiry
                  used       installed     needed
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
upgradel          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
```

show system license (View)

Syntax

```
show system license
<installed | keys | status | usage>
```

Release Information

Command introduced in Junos OS Release 9.5. Logical system status option added in Junos OS Release 11.2.

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

SEE ALSO

[Adding New Licenses \(CLI Procedure\) | 35](#)

List of Sample Output

[show system license on page 60](#)

[show system license installed on page 61](#)

[show system license keys on page 61](#)

[show system license usage on page 62](#)

[show system license status logical-system all on page 62](#)

Output Fields

[Table 22 on page 60](#) lists the output fields for the **show system license** command. Output fields are listed in the approximate order in which they appear.

Table 22: 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.
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 xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
      xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
      xxxxxxx xxxxxxx xxx

```

show system license usage

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

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
av_key_kaspersky_engine 01:00:00 IST	1	1	0	2012-03-30
wf_key_surfcontrol_cpa 01:00:00 IST	0	1	0	2012-03-30
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

traceoptions (System License)

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]
```

Release Information

Statement introduced in Junos OS Release 8.5 for SRX Series and vSRX.

Statement introduced in Junos OS Release 14.1X53-D10 for EX Series and QFX Series.

Statement introduced in Junos OS Release 15.1 for M Series, MX Series, and T Series.

Description

Set trace options for licenses.

Options

file—Configure the trace file information.

filename—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 number—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.

If you specify a maximum number of files, you also must specify a maximum file size with the **size maximum file-size** option.

Range: 2 through 1000 files

Default: 10 files

match *regular-expression*—Refine the output to include lines that contain the regular expression.

size *size*—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 **files *number*** option.

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 *flag*—Specify which tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements. You can include the following flags.

- **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.

request system license add

Syntax

```
request system license add (filename | terminal)
```

Release Information

Command introduced before Junos OS Release 7.4.

Command introduced in Junos OS Release 9.0 for EX Series switches.

Command introduced in Junos OS Release 9.5 for SRX Series devices.

Command introduced in Junos OS Release 11.1 for the QFX Series.

Added additional information section on XML RPC in Junos OS Release 17.4.

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

List of Sample Output

[request system license add on page 66](#)

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)
```

request system license save

Syntax

```
request system license save (filename | terminal)
```

Release Information

Command introduced before Junos OS Release 7.4.

Command introduced in Junos OS Release 9.0 for EX Series switches.

Command introduced in Junos OS Release 11.1 for the QFX Series.

Command introduced in Junos OS Release 9.5 for SRX Series devices.

Added additional information section on XML RPC in Junos OS Release 17.4.

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

List of Sample Output

[request system license save on page 68](#)

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
```

request system license update

Syntax

```
request system license update
```

Release Information

Command introduced in Junos OS Release 9.5.

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

List of Sample Output

[request system license update on page 69](#)

[request system license update trial on page 70](#)

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.

request system license delete

Syntax

```
request system license delete ( license-identifier | license-identifier-list [ licenseid001 licenseid002 licenseid003 ] | all
)
```

Release Information

Command introduced before Junos OS Release 7.4.

Command introduced in Junos OS Release 9.0 for EX Series switches.

Command introduced in Junos OS Release 11.1 for the QFX Series.

Option **license-identifier-list** introduced in Junos OS Release 13.1.

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

license

Syntax

```
license {
  autoupdate {
    url url <password password>;
  }
  keys {
    key key
  }
  renew {
    before-expiration number;
    interval interval-hours;
  }
  traceoptions (System License) {
    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]
```

Release Information

Statement introduced in Junos OS Release 8.5 for SRX Series and vSRX.

Options **keys** introduced in Junos OS Release 14.1X53-D10.

Statement introduced in Junos OS Release 14.1X53-D10 for EX Series and QFX Series, with option **keys** included.

Statement introduced in Junos OS Release 15.1 for M Series, MX Series, PTX Series, and T Series, with option **keys** included.

Description

Specify license information for the device.

Options

autoupdate—Autoupdate license keys from license servers.

before-expiration *number*—License renewal lead time before expiration, in days.

Range: 0 through 60 days

interval *interval-hours*—License checking interval, in hours.

Range: 1 through 336 hours

keys *key key*—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.

license-type

Syntax

```
license-type license deployment-scope [ deployments ];
```

Hierarchy Level

```
[edit system extensions providersprovider-id]
```

Release Information

Statement introduced in Junos OS Release 11.1 for FX Series switches.

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.

Licenses for Routing Devices

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Licenses for ACX Series

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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 23 on page 76](#) lists the licensed features that you can purchase for ACX5448-D and ACX5448-M Series Universal Metro Routers.

Table 23: 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	256K FIBs, 1K Layer 2 or Layer 3 VPN	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

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Software Features That Require Licenses on M Series, MX Series, and T Series Routers

[Table 24 on page 77](#) 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 24: 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
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

Table 24: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
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
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
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

Table 24: 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 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
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

Table 24: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
Subscriber Service Management Feature Pack 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
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 25 on page 82 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/>.

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 25: Junos OS Feature License Model Number for MX Series Routers

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 25: 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 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
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
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

Table 25: Junos OS Feature License Model Number for MX Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 25: Junos OS Feature License Model Number for MX Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
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
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 25: 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
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

Table 25: 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 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
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 25: 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
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

Table 25: Junos OS Feature License Model Number for MX Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 25: Junos OS Feature License Model Number for MX Series Routers (continued)

Licensed Software Feature	Supported Devices	Model Number
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 26 on page 90 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 26: 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 26: 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 27 on page 91](#) describes the two license variants for the PTX1000.

Table 27: 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 **license-mode** statement is only supported on the PTX3000 and PTX5000 Series routers with third-generation FPCs.

Table 28 on page 92 describes the two license variants for the PTX3000 and PTX5000.

Table 28: 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 29 on page 93](#) describes the three license variants.

Table 29: 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” on page 93](#)

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 TRIO/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 | 95](#)
- [Overview | 95](#)
- [Configuration | 96](#)
- [Verification | 98](#)

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

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 | 96](#)
- [Deleting the License Mode for MPC5E in Slot 4 | 97](#)
- [Configuring the License Mode for MPC5E in Slot 2 | 97](#)

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 | 98](#)
- [Verifying That the Configured License Mode Is Deleted | 99](#)
- [Verifying That the License Mode Is Configured for MPC5E in Slot 2 | 100](#)

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 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 ff
R/IR Mode: R
...
```

Meaning

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

Junos OS Feature License Keys

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 aborts 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 19 on page 32](#) 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 30: 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

Table 30: Upgrade Licenses for Enhancing Port Capacity (*continued*)

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
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
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 20 on page 33](#).

Table 31: 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 20 on page 33](#) 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

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 32 on page 104](#) describes number of subscriber interface and license required on subscriber access models.

Table 32: 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

Table 32: Number of Licenses Required per Access Model (*continued*)

Access Model	Number of Licenses Required
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
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](#) | 118

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](#) | 116

Licenses for vMX

IN THIS SECTION

- [vMX Licenses for AWS | 107](#)
- [vMX Licenses for KVM and VMware | 108](#)
- [Managing vMX Licenses | 110](#)

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 33 on page 107](#) describes the features available with application packages.

Table 33: 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 IPsec

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 34 on page 108](#) describes the features available with application packages.

Table 34: Application Packages for Licenses

Application Package	Features
BASE	IP routing with 256,000 routes in the forwarding table

Table 34: Application Packages for Licenses (*continued*)

Application Package	Features
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 35 on page 109 describes the queuing licenses.

Table 35: 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 36: 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 | 111](#)
- [Deleting a License | 112](#)

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
```

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:

Feature name           Licenses   Licenses   Licenses   Expiry
                        used      installed  needed
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: XXXXXXXX
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	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
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.
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 | 114](#)
- [Configuring the JET Application and its License on a Device Running Junos OS | 116](#)
- [Configuring the Router to Strictly Enforce the Subscriber Scaling License | 118](#)

Installing Junos OS Licenses on Virtual Chassis Member Routers

IN THIS SECTION

- [Installing Junos OS Licenses on Members | 114](#)
- [Reinstalling Junos OS Licenses on New Members | 115](#)

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 master 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 master 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.

See *Software Installation and Upgrade Guide*.

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 master 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

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

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

1. On the master 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 master 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>
```

SEE ALSO

[License Modes for Enhanced MPCs Overview | 93](#)

[Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers | 94](#)

[Software Features That Require Licenses on MX Series Routers Only | 80](#)

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

IN THIS SECTION

- [Configuring a Python Application to Run on a Device | 117](#)
- [Configuring a C or C++ Application to Run on a Device | 118](#)

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. For simple Python JET applications, which do not require licensing, this task is not required.

This topic contains two examples of configuring JET applications to run on Junos OS:

Configuring a Python Application to Run on a Device

To configure a JET Python application and its license on a device:

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

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

If you do not include the **language python** 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, for example:

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

The same provider license must be used to configure a JET application to run on Junos OS as was used to package it.

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 a Device

To configure a JET C or C++ application:

1. Configure the application's provider's ID, license type, and deployment scope.

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
```

The same provider license must be used to configure a JET application to run on Junos OS as was used to package it.

2. Commit the configuration and exit to operational mode.

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

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

SEE ALSO

[License Modes for Enhanced MPCs Overview | 93](#)

[Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers | 94](#)

[Software Features That Require Licenses on MX Series Routers Only | 80](#)

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
```

Licenses for Switching Devices

IN THIS CHAPTER

- Understanding Software Licenses for EX Series Switches | 120
- Licenses for EX Series | 134
- Licenses for QFX Series | 153

Understanding Software Licenses for EX Series Switches

IN THIS SECTION

- Purchasing a Software Feature License | 121
- License Key Components for the EX Series Switch | 121
- Features Requiring a License on EX2200 Switches | 122
- Features Requiring a License on EX2300 Switches | 123
- Features Requiring a License on EX3300 Switches | 124
- Features Requiring a License on EX3400 Switches | 125
- Features Requiring a License on EX4300 Switches | 127
- Features Requiring a License on EX4600 Switches | 129
- Features Requiring a License on EX4650 Switches | 130
- Features Requiring a License on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches | 131
- License Warning Messages | 133

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 master role and the other for the device in the backup role:

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

```
XXXXXXXXXXXX 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.

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 (includes IGMP Snooping)
- 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 37 on page 122](#) 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 37: 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 (includes IGMP Snooping)
- 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 38 on page 123](#) 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 38: 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.

- 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 (includes IGMP Snooping)
- 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 39 on page 124](#) 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 39: 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 40 on page 125](#) 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 40: 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 (includes IGMP Snooping)
- 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 41 on page 126](#) 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 41: 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 42 on page 126](#) 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 42: 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 43 on page 127](#) lists the MACsec model number that you can purchase for EX3400 switch models.

Table 43: 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)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3 (includes IGMP Snooping)
- Multicast Source Discovery Protocol (MSDP)
- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPFv2/v3
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

[Table 44 on page 128](#) 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 44: 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 45 on page 128](#) 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 45: 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

Table 45: Junos OS AFL Part Number on EX4300 Switches (continued)

Switch Model	AFL Part Number
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 46 on page 129](#) lists the MACsec model number that you can purchase for EX4300 switch models.

Table 46: 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 47 on page 129](#) lists the AFLs that you can purchase for EX4600 switch models.

Table 47: 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 48 on page 130](#) lists the MACsec model number that you can purchase for EX4600 switch models.

Table 48: 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 49 on page 130](#) 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 49: Junos OS Part Numbers on EX4650 Switches

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

[Table 50 on page 130](#) lists the standard Junos OS features which require licenses on EX4650 switches.

Table 50: 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)

Table 50: Features which Require Licenses on EX4650 Switches (*continued*)

License Model	Detailed Features
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 an 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 51 on page 132](#) 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 51: 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
EX8216	EX8216-AFL
EX-XRE200	EX-XRE200-AFL
EX9204	EX9204-AFL
EX9208	EX9208-AFL

Table 51: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches (continued)

Switch Model	AFL Part Number
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 52 on page 133](#) lists the MACsec model number that you can purchase for EX4200 and EX4550 switch models.

Table 52: 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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- [License Warning Messages | 147](#)

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 master role and the other for the device in the backup role:

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

```
XXXXXXXXXXXX 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.

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 (includes IGMP Snooping)
- 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 37 on page 122 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 53: 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 (includes IGMP Snooping)
- 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 38 on page 123 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 54: 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.
- 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 (includes IGMP Snooping)
- 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 39 on page 124](#) 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 55: 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 40 on page 125](#) 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 56: 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 (includes IGMP Snooping)
- 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 41 on page 126](#) 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 57: 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 42 on page 126](#) 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 58: 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 43 on page 127](#) lists the MACsec model number that you can purchase for EX3400 switch models.

Table 59: Junos OS MACsec model number on EX3400 Switches

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

Features Requiring a License on EX3400 Switches

Two types of licenses are available on EX3400 switches: enhanced feature licenses (EFLs) and advanced feature licenses (AFLs).

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

- Bidirectional Forwarding Detection (BFD)
- Connectivity fault management (IEEE 802.1ag)
- IGMP (Internet Group Management Protocol) version 1 (IGMPv1), IGMPv2, and IGMPv3 (includes IGMP Snooping)
- Multicast Source Discovery Protocol (MSDP)

- Operations Administration Management (OAM) (Connectivity Fault Management (CFM))
- OSPFv2/v3
- Real-time performance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 44 on page 128 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 60: 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 45 on page 128 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 61: 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 46 on page 129](#) lists the MACsec model number that you can purchase for EX4300 switch models.

Table 62: 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 47 on page 129](#) lists the AFLs that you can purchase for EX4600 switch models.

Table 63: 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 48 on page 130](#) lists the MACsec model number that you can purchase for EX4600 switch models.

Table 64: 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 49 on page 130](#) 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 65: Junos OS Part Numbers on EX4650 Switches

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

[Table 50 on page 130](#) lists the standard Junos OS features which require licenses on EX4650 switches.

Table 66: 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 an 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 51 on page 132](#) 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 67: 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
EX8216	EX8216-AFL
EX-XRE200	EX-XRE200-AFL
EX9204	EX9204-AFL

Table 67: 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 52 on page 133](#) lists the MACsec model number that you can purchase for EX4200 and EX4550 switch models.

Table 68: 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 (includes IGMP Snooping)
- (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:

```
XXXXXXXXXXXX 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.

Managing Licenses for EX Series Switches (CLI Procedure)

IN THIS SECTION

- Adding New Licenses | 150
- Deleting Licenses | 151

- Saving License Keys | 151
- Deleting Licenses | 151

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” on page 149](#).

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
```

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.

Monitoring Licenses for the EX Series Switches

Displaying Installed Licenses and License Usage Details

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: XXXXXXXXXXXX

License version: 2

Valid for device: XXXXXXXXXXXX

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

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 XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX
      XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX XXXXXXX
      XXXXXXX XXXXXXX 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

- [Generating License Keys | 153](#)
- [Software Features That Require Licenses on the QFX Series | 155](#)
- [Disaggregated Software Features That Require Licenses on the QFX Series | 162](#)
- [Generating the License Keys for a QFabric System | 163](#)
- [Understanding Junos Fusion Licenses | 165](#)

Generating License Keys

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.

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” on page 155](#) and [“Disaggregated Software Features That Require Licenses on the QFX Series” on page 162](#).

- 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 *Locating the Serial Number on a QFX3500 Device or Component*.

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. Select the **QFX Series Product Device** option button, and click **Continue**.

The Generate Licenses - QFX Series Product Devices page appears.

4. In the **Device Serial Number** field, enter the serial number for the device.

5. In the **Authorization Code** field, enter the authorization code in the e-mail you received from Juniper Networks when you purchased the license.

6. (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.

7. Click **Confirm**.

The Confirm License Information page appears, displaying a summary of the information you submitted to the License Management System.

8. 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.

9. Select the file format in which you want to obtain your new license keys.

10. 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 | 155](#)

[Locating the Serial Number on a QFX3500 Device or Component](#)

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 [“Disaggregated Software Features That Require Licenses on the QFX Series” on page 162](#).

For information regarding newer subscription based licenses, including platforms supported, see [Flex Software Subscription Model](#).

For information about how to purchase any software license, contact your Juniper Networks sales representative, or an approved [Juniper Partner](#).

[Table 69 on page 155](#) lists the Junos OS features which require licenses on QFX5100, QFX5110, and QFX10000 line of switches.

Table 69: Software Features which Require Licenses on QFX5100, QFX5110, 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

Table 69: Software Features which Require Licenses on QFX5100, QFX5110, and QFX10000 line of switches. (continued)

Base Features	Premium Features	Advanced Features
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		
Timing – Boundary Clock		
Timing – Transparent Clock		
Unicast reverse-path forwarding(RPF)		
Virtual Chassis (VC) Applicable also for QFX5200-32C/48Y switches.		
Virtual Router		
VRRP		
VRRPv6		

Table 69: Software Features which Require Licenses on QFX5100, QFX5110, and QFX10000 line of switches. (continued)

Base Features	Premium Features	Advanced Features
Zero Touch Provisioning (ZTP)		

[Table 70 on page 157](#) lists the Junos OS features which require licenses on QFX5120, QFX5200, QFX5210 switches.

Table 70: Software Features which Require Licenses on QFX5120, QFX5200, QFX5210 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		
OSPFv3		
PIM-DM/SM/SSM		
PIMv6		
Q-in-Q tunneling (IEEE 802.1ad)		
RIPng		
RPM		

Table 70: Software Features which Require Licenses on QFX5120, QFX5200, QFX5210 switches. (continued)

Base Features	Premium Features	Advanced Features
Timing – Boundary Clock		
Timing – Transparent Clock		
Unicast reverse-path forwarding(RPF)		
	Virtual Chassis (VC) Except for QFX5200-32C/48Y switches.	
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 71 on page 158 describes the licenses required for QFX series switches:

Table 71: Licenses Required for QFX Series Switches

Licence	Description	Number of Licenses Required	QFX Devices Supported
Base	Features included with the switch - No License required	-	-

Table 71: Licenses Required for QFX Series Switches (continued)

Licence	Description	Number of Licenses Required	QFX Devices Supported
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
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
QFX5000-35-JBS	QFX5200-32C Base Services License	One per switch	QFX5200-32C
QFX5000-35-JPS	QFX5200-32C Premium Services License	One per switch	QFX5200-32C
QFX5000-35-JAS	QFX5200-32C Advanced Feature License	One per switch	QFX5200-32C
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

Table 71: Licenses Required for QFX Series Switches (*continued*)

Licence	Description	Number of Licenses Required	QFX Devices Supported
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
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

Table 71: Licenses Required for QFX Series Switches (*continued*)

Licence	Description	Number of Licenses Required	QFX Devices Supported
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
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
QFX10002-60C-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per switch	QFX10002-60C

Table 71: Licenses Required for QFX Series Switches (*continued*)

Licence	Description	Number of Licenses Required	QFX Devices Supported
QFX10002-72Q-LFIB	1 Million (v4 or v6) Forwarding Information Base (FIB) entries license	One per switch	QFX10002-72Q

Disaggregated Software Features That Require Licenses on the QFX Series

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.

For information on standard Junos OS feature licenses, see [“Software Features That Require Licenses on the QFX Series” on page 155](#).

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 72: Disaggregated Junos OS Feature Licenses and Associated SKU's

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

Generating the License Keys for a QFabric System

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.

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” on page 155](#).
- 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]
```

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 73 on page 166](#) 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 73 on page 166](#) 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” on page 155](#).

Table 73: 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](#) | 153

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Licenses for SRX Series

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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 74 on page 169](#) lists the licenses you can purchase for each SRX Series software feature.

Table 74: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX100	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX100	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX100	SRX-RAC-25-LTU
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
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 75 on page 170](#) lists the licenses you can purchase for each SRX Series software feature.

Table 75: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX210	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX210	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX210	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX210	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX210	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX210	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX210	SRX-RAC-250-LTU
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
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

Table 75: SRX210 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 76 on page 171 lists the licenses you can purchase for each SRX Series software feature.

Table 76: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX220	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX220	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX220	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX220	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX220	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX220	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX220	SRX-RAC-250-LTU
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX220	SRX220-IDP SRX220-IDP-3
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

Table 76: SRX220 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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 77 on page 172](#) lists the licenses you can purchase for each SRX Series software feature.

Table 77: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX240	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX240	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX240	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX240	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX240	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX240	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX240	SRX-RAC-250-LTU

Table 77: SRX240 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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 78 on page 173](#) lists the licenses you can purchase for each SRX Series software feature.

Table 78: 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

Table 78: SRX300 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX300	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX300	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX300	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX300	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX300	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX300	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX300	SRX-RAC-250-LTU
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
Remote Access (5 Concurrent users, NCP)	SRX300	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX300	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX300	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX300	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX300	SRX-RA1-100

Table 78: SRX300 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Remote Access (150 Concurrent users, NCP)	SRX300	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX300	SRX-RA1-250

Features Requiring a License on SRX320 Devices

Table 79 on page 175 lists the licenses you can purchase for each SRX Series software feature.

Table 79: 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 80 on page 176 lists the licenses you can purchase for each SRX Series software feature.

Table 80: 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 81 on page 177](#) lists the licenses you can purchase for each SRX Series software feature.

Table 81: 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
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 82 on page 178](#) lists the licenses you can purchase for each SRX Series software feature.

Table 82: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX550	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX550	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX550	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX550	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX550	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX550	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX550	SRX-RAC-250-LTU
Dynamic VPN (500 Concurrent users, PulseSecure)	SRX550	SRX-RAC-500-LTU
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX550	SRX550-IDP SRX550-IDP-3 SRX550-IDP-5
Kaspersky antivirus (1 year, 3 years and 5 years subscription)	SRX550	SRX550-K-AV SRX550-K-AV-3 SRX550-K-AV-5

Table 82: SRX550 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 82: SRX550 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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 83 on page 180](#) lists the licenses you can purchase for each SRX Series software feature.

Table 83: 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
Dynamic VPN (5 Concurrent users, PulseSecure)	SRX650	SRX-RAC-5-LTU
Dynamic VPN (10 Concurrent users, PulseSecure)	SRX650	SRX-RAC-10-LTU
Dynamic VPN (25 Concurrent users, PulseSecure)	SRX650	SRX-RAC-25-LTU
Dynamic VPN (50 Concurrent users, PulseSecure)	SRX650	SRX-RAC-50-LTU
Dynamic VPN (100 Concurrent users, PulseSecure)	SRX650	SRX-RAC-100-LTU
Dynamic VPN (150 Concurrent users, PulseSecure)	SRX650	SRX-RAC-150-LTU
Dynamic VPN (250 Concurrent users, PulseSecure)	SRX650	SRX-RAC-250-LTU
Dynamic VPN (500 Concurrent users, PulseSecure)	SRX650	SRX-RAC-500-LTU

Table 83: SRX650 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 84 on page 181](#) lists the licenses you can purchase for each SRX Series software feature.

Table 84: 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

Table 84: SRX1400 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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 85 on page 182](#) lists the licenses you can purchase for each SRX Series software feature.

Table 85: 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

Table 85: SRX1500 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)	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
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

Table 85: SRX1500 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)	SRX1500	SRX1500-ATP-1
		SRX1500-ATP-3
		SRX1500-ATP-5

Features Requiring a License on SRX3400 Devices

Table 86 on page 184 lists the licenses you can purchase for each SRX Series software feature.

Table 86: 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

Table 86: SRX3400 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
Sophos antispam (1 year and 3 year subscription)	SRX3400	SRX3400-S-AS-1 SRX3400-S-AS-3
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 87 on page 185](#) lists the licenses you can purchase for each SRX Series software feature.

Table 87: 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
Sophos antispam (1 year and 3 year subscription)	SRX3600	SRX3600-S-AS-1 SRX3600-S-AS-3

Table 87: SRX3600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 88 on page 186 lists the licenses you can purchase for each SRX Series software feature.

Table 88: 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
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

Table 88: SRX4100 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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
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 89 on page 188 lists the licenses you can purchase for each SRX Series software feature.

Table 89: 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
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

Table 89: SRX4200 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
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 90 on page 189 lists the licenses you can purchase for each SRX Series software feature.

Table 90: 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

Table 90: SRX4600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 90: SRX4600 Junos OS Feature License Model Number (continued)

Licensed Software Feature	Supported Devices	Model Number
Remote Access (5000 Concurrent users, NCP)	SRX4600	SRX-RA1-5000
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 91 on page 191](#) lists the licenses you can purchase for each SRX Series software feature.

Table 91: 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
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

Table 91: SRX5400 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 91: SRX5400 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)	SRX5400	SRX5400-ATP-1
		SRX5400-ATP-3
		SRX5400-ATP-5

Features Requiring a License on SRX5600 Devices

[Table 92 on page 193](#) lists the licenses you can purchase for each SRX Series software feature.

Table 92: 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

Table 92: SRX5600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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
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 93 on page 195 lists the licenses you can purchase for each SRX Series software feature.

Table 93: 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
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

Table 93: SRX5800 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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** 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

Verifying Licenses on an SRX Series Device in a Chassis Cluster

Purpose

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.

Action

Licenses details on node 0.

user@host> show system license installed

```
{primary:node0}
user@host> show system license
License usage:

      Feature name           Licenses   Licenses   Licenses   Expiry
                        used   installed   needed
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:

```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
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 master 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
```

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
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

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 94: 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 blacklists and whitelists 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:				
	Licenses	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
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:

Feature name      Licenses      Licenses      Licenses      Expiry
                  used         installed     needed
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, 2009-0406 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.

Starting from Junos OS Release 17.4R1, for SRX4600, application signatures are included by default.

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://ael.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 \(CLI Procedure\) | 35](#)

Managing Junos OS Licenses

IN THIS SECTION

- [Displaying License Keys in J-Web | 209](#)
- [Downloading License Keys | 209](#)

- [Generating a License Key | 209](#)
- [Saving License Keys | 210](#)
- [Updating License Keys \(CLI\) | 210](#)
- [Example: Adding a New License Key | 212](#)
- [Example: Deleting a License Key | 215](#)

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:

1. 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](#) | 28

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:

1. 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 | 196](#)

[Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices | 202](#)

Example: Adding a New License Key

IN THIS SECTION

- Requirements | 212
- Overview | 212
- Configuration | 212
- Verification | 214

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

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 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	Licenses	Licenses	Expiry
Feature name	used	installed	needed	
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

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
```

```
XXXXXXXXXXXX xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
          xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
          xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
          xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx xxxxxxx
```

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 | 216](#)
- [Overview | 216](#)
- [Configuration | 216](#)
- [Verification | 217](#)

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

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 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 | 217](#)

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 | 218](#)
- [Managing Licenses for vSRX | 226](#)
- [vSRX License Model Numbers | 234](#)
- [vSRX License Model Numbers for Contrail, KVM, Microsoft Hyper-V, and VMware | 236](#)

vSRX Feature Licenses Overview

IN THIS SECTION

- [vSRX License Procurement and Renewal | 218](#)
- [vSRX Evaluation License | 219](#)
- [License Types | 220](#)
- [Throughput | 221](#)
- [License Duration | 222](#)
- [Individual \(à la carte\) Feature Licenses | 222](#)
- [Bundled Licenses | 222](#)
- [Stacking Licenses | 222](#)
- [vSRX License Keys Components | 223](#)
- [License Management Fields Summary | 223](#)

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.

```
vsrx> show system license
```

License usage:				
Feature name	Licenses used	Licenses installed	Licenses needed	Expiry

```
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: 9XXXXXXX9
```

```
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 95 on page 219](#) lists vSRX evaluation license types.

Table 95: 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 11 on page 221 shows a sample license SKU and identifies how each field maps to these categories.

Figure 11: 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 effffff
cccccc bbbbbb dddddd aaaaaa fffffff aaaaaa
aaaaaa bbbbbb cccccc dddddd eeeee effffff
cccccc bbbbbb dddddd aaaaaa fffffff
```

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 12 on page 224](#).

Figure 12: J-Web Licenses Window Showing Installed Licenses

vsrx2-ide-pv11 / VSRX

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 Virus with Sophos Engine	0	1	0	2016-07-29
Virtual Appliance	1	1	0	2016-04-25

Installed Licenses

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"/> JUN05606279	valid	4	No group information	av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-02-27 - 2016-02-28
				av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-04-15 - 2016-04-15
				wf_key_websense_ewf - Web Filtering EWF	date-based, 2015-04-15 - 2016-04-15
<input type="checkbox"/> JUN05623127	valid	4	No group information	appid-sig - APPID Signature	date-based, 2015-04-15 - 2016-04-15
				idp-sig - IDP Signature	date-based, 2015-04-15 - 2016-04-15
				anti_spam_key_sb1 - Anti-Spam	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

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:

Feature name	Licenses used	Licenses installed	Licenses needed	Expiry
anti_spam_key_sb1	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 18 on page 28](#).

Table 96: Summary of License Management Fields

Field Name	Definition
Feature Summary	
Feature	Name of the licensed feature: <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	Valid —The installed license key is valid. Invalid —The installed license key is not valid.
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.

Table 96: Summary of License Management Fields (*continued*)

Field Name	Definition
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 show system license 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 | 226](#)
- [Adding a New License Key with J-Web | 228](#)
- [Adding a New License Key from the CLI | 229](#)
- [View vSRX License Information | 230](#)
- [Updating vSRX Licenses | 230](#)
- [Deleting a License with J-Web | 231](#)
- [Deleting a License with the CLI | 232](#)
- [License Warning Messages | 233](#)

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 229](#)).

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.

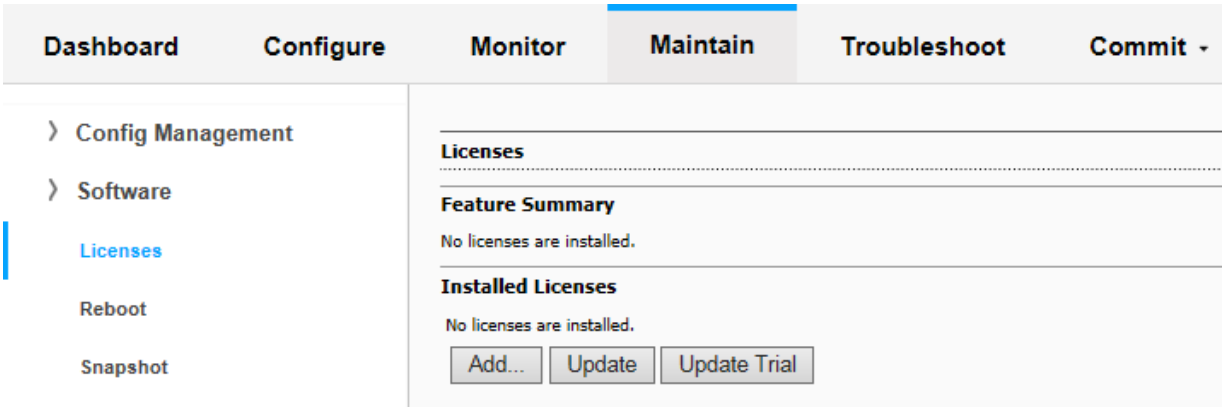
For details about the 60- and 30-day license evaluation periods for the vSRX see [“vSRX Feature Licenses Overview” on page 218](#).

Adding a New License Key with J-Web

To install a license using the J-Web interface:

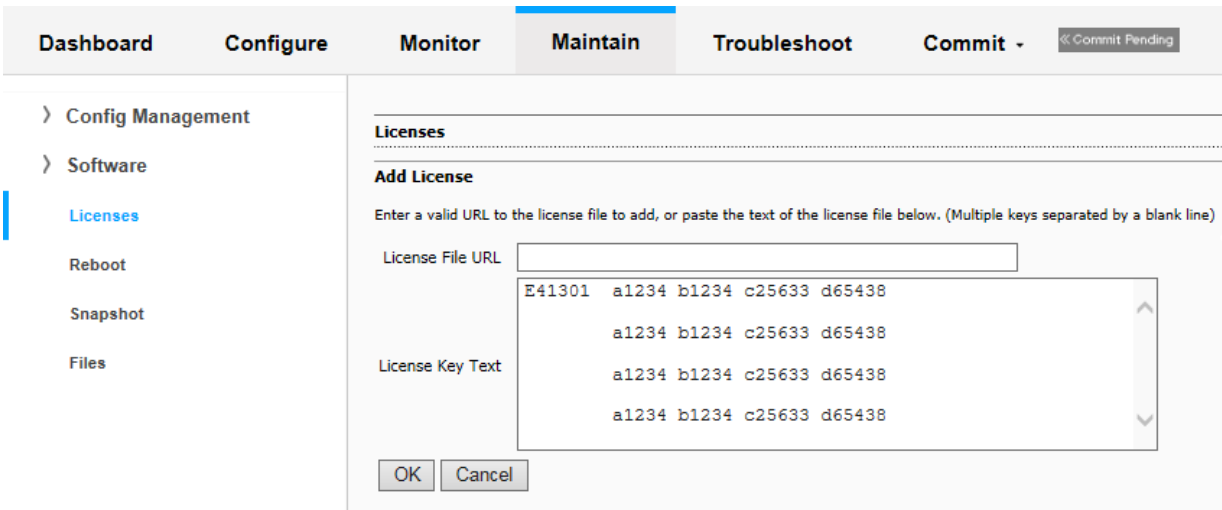
1. Select **Maintain>Licenses** on the J-Web user interface. The Licenses window is displayed as shown in [Figure 13 on page 228](#).

Figure 13: J-Web Licenses Window



2. Under Installed Licenses, click **Add**. The Add License window is displayed as shown in [Figure 14 on page 228](#).

Figure 14: 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.
4. Click **OK** to add the license key. The License Details window is displayed as shown in [Figure 15 on page 229](#).

Figure 15: 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:

1. 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 16 on page 232](#).

Figure 16: 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
					av_key_sophos_engine - Anti Virus with Sophos Engine	date-based, 2015-04-15 - 2016-04-15
					wf_key_websense_ewf - Web Filtering EWF	date-based, 2015-04-15 - 2016-04-15
<input type="checkbox"/>	JUN05623127	valid	4	No group information	appid-sig - APPID Signature	date-based, 2015-04-15 - 2016-04-15
					idp-sig - IDP Signature	date-based, 2015-04-15 - 2016-04-15
					anti_spam_key_sbl - Anti-Spam	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 17 on page 232](#).

Figure 17: 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 3 on page 4](#) describes the subscription terms for purchase and number of months to use the license.

Table 97: Subscription Terms Details

Subscription Terms	Number of Months for the License
1 year	13 months

Table 97: Subscription Terms Details (continued)

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 18 on page 234](#).

Figure 18: 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 98 on page 235 describes the features available with the various license packages.

Table 98: 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)
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 98: vSRX Licensing Package Types (continued)

License Type	Description	License Model Number
CSB	Includes all STD features, along with the features bundled with ASCB, including the addition of the following UTM features: <ul style="list-style-type: none"> • Antivirus • Content filtering • Web filtering 	These Content Security Bundled (CSB) bandwidth SKUs are available for vSRX: <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	vSRX-1G-ATP-B bundle includes: <ul style="list-style-type: none"> • Juniper 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 Juniper SkyATP.

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 99 on page 237](#) describes the features available with the various license packages.

Table 99: 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 100 on page 239 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 101 on page 240 for bandwidth SKUs available for vSRX with AppSecure and IPS features.</p>
CS-B	<p>Includes all STD features bundled with ASEC features and the addition of UTM capabilities:</p> <ul style="list-style-type: none"> • Antispam • Antivirus • Content filtering • Web filtering 	<p>Subscription licenses only.</p> <p>See Table 103 on page 242 for CS-B bandwidth SKUs available for vSRX.</p>

Table 99: vSRX Licensing Package Types (*continued*)

License Type	Description	Duration
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 102 on page 241 for AppSecure and IPS SKUs available for vSRX. See Table 105 on page 244 for Sophos antivirus bandwidth SKUs available for vSRX. Table 106 on page 245 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 100 on page 239](#) lists the standard bandwidth licenses available for vSRX.

Table 100: 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 101 on page 240 lists the bandwidth licenses available for vSRX bundled with AppSecure and IPS features.

Table 101: 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 102 on page 241](#) lists the individual (a la cart) subscription licenses available for vSRX with AppSecure and IPS features.

Table 102: 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 103 on page 242 lists the Content Security Bundled (CSB) bandwidth licenses available for vSRX.

Table 103: 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 104 on page 243 lists the individual (a la carte) CS subscription licenses available for vSRX.

Table 104: 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 105 on page 244 lists the individual (a la carte) Sophos antivirus (S-AV) bandwidth licenses available for vSRX.

Table 105: 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 106 on page 245](#) lists the individual (a la carte) enhanced Web filtering (W-EWF) subscription licenses available for vSRX.

Table 106: 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 107 on page 245](#) lists the remote access licenses you can purchase for vSRX.

Table 107: vSRX Remote Access Licenses

Remote Access Licenses	Model Number
Remote Access (5 Concurrent users, NCP)	vSRX-RA1-5
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

Table 107: vSRX Remote Access Licenses (*continued*)

Remote Access Licenses	Model Number
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

IN THIS SECTION

- [Licenses for JATP Advanced Threat Prevention Appliance | 246](#)
- [Licenses for Juniper Sky Advanced Threat Prevention \(ATP\) | 250](#)

Licenses for JATP Advanced Threat Prevention Appliance

IN THIS SECTION

- [Licensing and Platform Support information | 246](#)
- [Setting the Juniper ATP Appliance License Key | 248](#)

Licensing and Platform Support information

IN THIS SECTION

- [JATP and SRX Series Integration Licensing | 247](#)
- [Supported SRX Series Devices | 247](#)

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” on page 248](#).

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
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

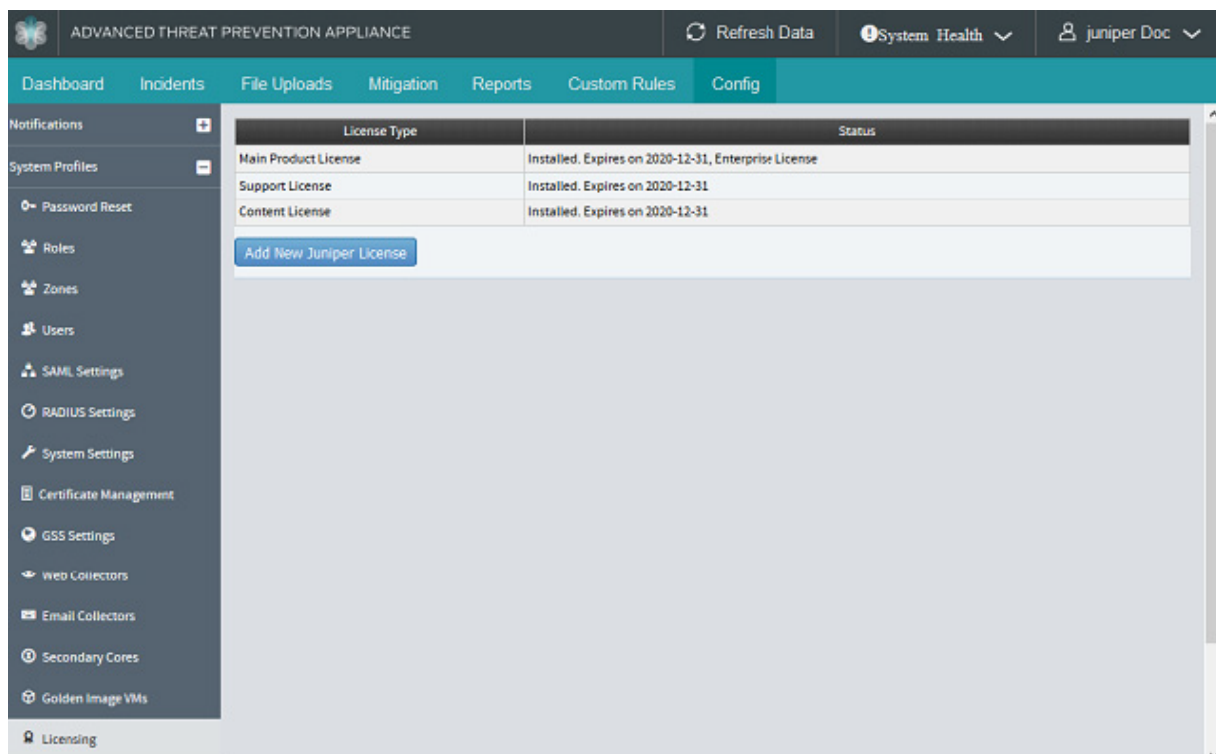
| *Getting Started with JATP and the SRX Series Device*

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 Sky Advanced Threat Prevention (ATP)

IN THIS SECTION

- [Juniper Sky Advanced Threat Prevention License Types | 250](#)
- [Managing the Juniper Sky Advanced Threat Prevention License | 252](#)
- [Troubleshooting Juniper Sky Advanced Threat Prevention: Checking the application-identification License | 255](#)

Juniper Sky Advanced Threat Prevention License Types

Juniper Sky ATP 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 Sky Advanced Threat Prevention 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 inject feeds into Juniper Sky ATP.
- **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 Sky ATP 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 Sky ATP. 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 Sky ATP.

[Table 108 on page 251](#) shows a comparison between the free model and the premium model.

Table 108: Comparing the Juniper Sky ATP 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 Sky 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 Sky ATP service. You can specify which file types are sent to service for inspection.
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 Sky 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 Sky Advanced Threat Prevention 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 Sky Advanced Threat Prevention License

IN THIS SECTION

- [Obtaining the Premium License Key | 252](#)
- [License Management and SRX Series Devices | 253](#)
- [Juniper Sky ATP Premium Evaluation License for vSRX | 253](#)
- [License Management and vSRX Deployments | 254](#)
- [High Availability | 255](#)

This topic describes how to install the Juniper Sky ATP premium license onto your SRX Series devices and vSRX deployments. You do not need to install the Juniper Sky ATP free license as these are included your base software. Note that the free license has a limited feature set (see *Juniper Sky Advanced Threat Prevention License Types* and *Sky Advanced Threat Prevention File Limitations*).

When installing the license key, you must use the license that is specific your device type. For example, the Juniper Sky ATP premium license available for the SRX Series device cannot be used on vSRX deployments.

Obtaining the Premium License Key

The Juniper Sky ATP 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 Sky ATP 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 Sky ATP 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 Sky ATP 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 Sky ATP cloud server.

Juniper Sky ATP Premium Evaluation License for vSRX

The 30-day Juniper Sky ATP countdown premium evaluation license allows you to protect your network from advanced threats with Juniper Sky ATP. The license allows you to use Juniper Sky ATP premium features for 30-days without having to install a license key. After the trial license expires, the connection to the Juniper Sky ATP cloud is broken and you will no longer be able to use any Juniper Sky ATP 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 Sky ATP 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 Sky ATP. For more information, see [Registering a Juniper Sky Advanced Threat Prevention Account](#).

License Management and vSRX Deployments

Unlike with physical SRX Series devices, you must install Juniper Sky ATP premium licenses onto your vSRX. Installing the Juniper Sky ATP 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 Sky ATP license key on your vSRX, you must first remove the existing Juniper Sky ATP 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 Sky ATP 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 Sky ATP cloud will recognize this is an HA cluster and will automatically enroll the other node.

Troubleshooting Juniper Sky Advanced Threat Prevention: 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.

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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 109 on page 258](#).

Table 109: 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 110 on page 259](#) describes the additional fields that are displayed.

Table 110: 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.
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 111 on page 260](#).

Table 111: 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.
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 112 on page 261](#).

Table 112: 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 113 on page 262](#) describes the additional fields that are displayed.

Table 113: 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.
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 master 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.

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” on page 267](#) 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” on page 268](#).

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 114 on page 265](#).

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 115 on page 266](#).

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 115 on page 266](#) and [Table 116 on page 266](#). 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 114: 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.

Table 114: License Usage Summary Fields (continued)

Field	Description
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 115: 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.
Validity Type	The SKU or feature is considered permanent if it is not trial, count-down, or data-based.

Table 116: 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.

Generating and Uploading the Junos Space License Key File

IN THIS SECTION

- [Generating the Junos Space License Key File | 268](#)
- [Uploading the Junos Space License Key File Contents | 268](#)

- From Junos Space Network Management Platform Release 13.1R1 onward, the licensing model of Junos Space does not require license keys for Junos Space applications. Nevertheless, a license file is still needed for the Junos Space Platform functionality because the default Junos Space Platform license file is valid only for 60 days after which the Junos Space Platform functionality is not available.

When you purchase a commercial version of Junos Space Platform, Juniper Networks provides you with a license file that does not have any expiry date. After you import this license into Junos Space Platform, you have access to the full Junos Space Platform functionality for an unlimited period.

- Since Junos Space applications do not use license keys, the Licenses page (**Administration > Licenses**) does not display licensing information for any Junos Space applications that you might have purchased and installed. However, if you use Junos Space Platform with only Service Now and Service Insight installed, licensing information for those applications is displayed on the Licenses page. To find out the licensing information about Junos Space applications that you purchased, contact the Juniper Technical Assistance Center.

The Junos Space Platform software provides a default, 60-day trial license. After 60 days, the use of the Junos Space Platform software expires except for the **Import License** action. The administrator must activate the software with the Juniper Networks license key to regain use of the Junos Space Platform. Two weeks before the license expiration date, a license expiration warning appears when users log in to Junos Space Platform.

Junos Space Platform license management involves a two-step process:

1. Generating the license key file. Juniper Networks uses a license management system (LMS) to manage the deployment of the Junos Space Platform product—appliances, connection points, connections, and applications. When you order Junos Space Platform, the Juniper Networks LMS sends you an e-mail with an authorization code and a software serial number and instructions on how to generate a license key.
2. Import the license key into Junos Space Platform. The system administrator must import the Junos Space license key file from the Licenses page (**Administration > Licenses**) to use Junos Space Platform beyond the trial period.

This topic includes the following sections:

Generating the Junos Space License Key File

When you order Junos Space Platform, Juniper Networks sends an e-mail containing an authorization code and a software serial number (the serial number that identifies the software installation) along with instructions on how to generate the license key.

When you order a Junos Space Appliance, Juniper Networks sends an e-mail containing the serial number for the appliance that is licensed for the appropriate stock-keeping unit (SKU).

Uploading the Junos Space License Key File Contents

To upload the Junos Space license key file, perform the following steps:

1. Open the Juniper Networks Authorization Codes e-mail you received and follow the directions.
2. Open the Junos Space license key text file attached to the e-mail and copy all the contents.
3. In the Junos Space Platform UI, select **Administration > Licenses**.

The Licenses page appears.

4. Click the **Import License** icon.

The Import License page appears.

5. Paste the contents of the Junos Space license key text file in the **License data** field.

Paste the license data into the **License data** field using Ctrl+V or by selecting paste in the browser Edit menu.

6. Click **Upload**.

The license key data is uploaded to the Junos Space Platform database. A message indicating that the Junos Space license is uploaded successfully appears.

7. Click **OK**.

The Junos Space license appears on the Licenses inventory page.

Viewing Junos Space Licenses

From Junos Space Network Management Platform Release 13.1R1 onward, the licensing model of Junos Space does not require license keys for Junos Space applications. However, a license file is still needed for the Junos Space Platform functionality because the default Junos Space Platform license file is valid only for 60 days after which the Junos Space Platform functionality is not available.

Since Junos Space applications do not use license keys, the Licenses page (**Administration > Licenses**) does not display licensing information for any Junos Space applications that you might have purchased and installed. However, if you use Junos Space Platform with only Service Now and Service Insight installed,

licensing information for those applications is displayed on the Licenses page. To find out the licensing information about Junos Space applications that you purchased, please contact the Juniper Technical Assistance Center.

The Licenses inventory page displays the Junos Space Platform license that the administrator has uploaded. For more information about obtaining and uploading the Junos Space Platform license, see [“Generating and Uploading the Junos Space License Key File” on page 267](#).

The Licenses page displays the Junos Space Platform trial license until you upload the one specifically generated for your software installation.

To view the Junos Space license details:

1. In the Junos Space Platform UI, select **Administration > Licenses**.

The Licenses page appears displaying the details of the Junos Space Platform license, as shown in [Table 117 on page 269](#).

Table 117: License Details

Field	Description
License Type	The Junos Space Platform license can either be a trial license installed (Trial) with the Junos Space Platform software image or a commercial one (Commercial) that you upload into Junos Space Platform.
Sku Model #	The Junos Space Platform license stock-keeping unit (SKU) model number. If the license is a trial license, the SKU displayed is Trial-license . If it is a commercial license, the license SKU is displayed; for example, JS-PLATFORM .
Total License Days	For a trial license, the total number of license days is 60. For a commercial license, the total number of license days is unlimited (Unlimited).
Remaining License Days	For a trial license, the remaining number of days is the countdown of the number of days since you installed Junos Space Platform (for example, 36). For a commercial license, the remaining number of days is unlimited (Unlimited).

Juniper Connected Security for VMware NSX Licensing

IN THIS SECTION

- [Juniper Connected Security for VMware NSX Advanced Security Licenses | 270](#)
- [License Duration | 271](#)
- [License Procurement and Installation | 271](#)

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 99 on page 237](#) describes the various license packages.

Table 118: 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

Managing License Keys (ScreenOS Only)

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 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 system 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 system 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
7xOrhIZnuT9urbumyQq9ySO3ovFjXzTJbiIbncmj6IUh4bkfKpu9H4WIu5qrsBvK
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 119 on page 279](#) answers frequently asked questions about NSM licensing.

Table 119: 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.
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.

Table 119: Licensing FAQ (continued)

Question	Answer
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 274 . For upgrades, see “Upgrading to an NSM Release that Requires a License” on page 276 .
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 \(J-Web Procedure\) | 281](#)

Managing Licenses for the EX Series Switch (J-Web Procedure)

IN THIS SECTION

- Adding New Licenses | 281
- Deleting Licenses | 282
- Displaying License Keys | 282
- Downloading Licenses | 282

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” on page 149](#).

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.

Licenses for Contrail Service Orchestration

IN THIS CHAPTER

- [Licenses for Contrail Service Orchestration | 283](#)

Licenses for Contrail Service Orchestration

IN THIS SECTION

- [About the Device License Files Page | 283](#)
- [Uploading a Device License File | 285](#)
- [Editing and Deleting Device Licenses | 285](#)
- [Pushing a License to Devices | 287](#)
- [About the CSO Licenses Page | 287](#)
- [Assign CSO Licenses, and Update or Unassign CSO License Assignments | 289](#)

About the Device License Files Page

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 285](#).

- Push licenses to devices. See [“Pushing a License to Devices” on page 287](#).
- 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 120 on page 284](#) describes the fields on the License Files page.

Table 120: 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.
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 | 286](#)
- [Deleting a Device License | 286](#)

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

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 289](#).
- 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 289](#).
- 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 121 on page 288](#) describes the fields on the CSO Licenses page.

Table 121: Fields on the CSO Licenses page

Field	Description
License SKU	Displays the license SKU name; for example, S-CSO-C-S1-A-3.
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.

Table 121: Fields on the CSO Licenses page (*continued*)

Field	Description
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.
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 289.

Assign CSO Licenses, and Update or Unassign CSO License Assignments

IN THIS SECTION

- [Assign CSO Licenses to Tenants | 290](#)
- [Update or Unassign CSO License Assignments | 291](#)

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 122 on page 290](#).

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 122: Fields on the Assign CSO License page

Field	Description
License Information	Displays the following information for the license: <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 122: 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 122 on page 290](#) 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

IN THIS CHAPTER

- Obtaining License Keys | 293

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**.

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.)

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.