Juniper Networks | Engineering Simplicity

Licensing Guide

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Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

Licensing Guide

The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

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

END USER LICENSE AGREEMENT

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Table of Contents

About the Documentation

IN THIS SECTION

This guide describes how to install, manage, and monitor Junos OS licenses on Juniper Networks devices.

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 x 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 x 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`
Italic text like this	• Introduces or emphasizes important new terms. • Identifies guide names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS CLI User Guide* • RFC 1997, *BGP Communities Attribute*

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

Convention	Description	Examples
Italic text like this	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** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• 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 *metric*>;**
| (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** **(*string1* | *string2* | *string3*)**
# (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 [*community-ids*]**

Indention and braces ({ })	Identifies a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		

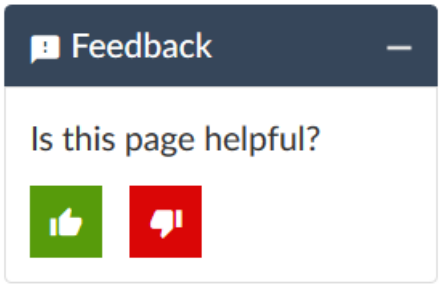
Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• 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/

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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
CHAPTER

Overview

Software License Overview

IN THIS SECTION

Platforms Supported in the Licensing Guide

This guide describes how to install, manage, and monitor licenses on Juniper Networks devices. Table 3 on page 17 shows the platforms supported in the licensing guide.

Table 3: 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
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) | 35

show system license | 39

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) | 26
- Deleting License Keys (CLI) | 32
- Saving License Keys (CLI) | 37
- Verifying Junos OS License Installation (CLI) | 35

Junos OS Feature License Keys

IN THIS SECTION

This section contains the following topics:

License Key Components

A license key consists of two parts:

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

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

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

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

License Management Fields Summary

The Licenses page displays a summary of licensed features that are configured on the device and a list of licenses that are installed on the device. The information on the license management page is summarized in Table 4 on page 20.

Table 4: Summary of License Management Fields

Field Name	Definition
Feature Summary	
Feature	Name of the licensed feature: • **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.

Table 4: Summary of License Management Fields *(continued)*

Field Name	Definition
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. If the license requires a group license, this field displays the required 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.
Expiry	Verify that the expiration information for the license is correct. For Junos OS, only permanent licenses are supported. If a license has expired, it is shown as invalid.

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 5 on page 23 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 5: 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

Table 5: Upgrade Licenses for Enhancing Port Capacity *(continued)*

Chassis Type	Port Capacity	I2C ID	Base Capacity	Feature ID and Feature Name	Upgrade Capacity
MX40	60G	0x554	Slot 1, SLot 2 and first 2 ports on Slot 0 • 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 6 on page 25.

Table 6: 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 6 on page 25 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) | **201**

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 | **26**

Managing Licenses

IN THIS SECTION

Adding New Licenses (CLI Procedure)

IN THIS SECTION

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

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:
                              Licenses     Licenses    Licenses    Expiry
  Feature name                    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 xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx";
+       }
+   }
```

4. Issue the **commit** command.

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

5. To verify that the license key was installed, issue the **show system license** command.

For example:

```
root@switch> show system license
```

```
License usage:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                      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
```

Installing a License Using an Operational Command

IN THIS SECTION

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 35.

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 | 18

Deleting License Keys (CLI)

IN THIS SECTION

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

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

Output Fields

Table 7 on page 40 lists the output fields for the **show system license** command. Output fields are listed in the approximate order in which they appear.

Table 7: 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 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. 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.
Licenses installed	Information about the installed license key: • **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 7: 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:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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: XXXXXXXXXX
  License version: 2
 Customer ID: ACME CORPORATIOM
  Features:
    subscriber-accounting - Per Subscriber Radius Accounting
      permanent
    subscriber-authentication - Per Subscriber Radius Authentication
      permanent
    subscriber-address-assignment - Radius/SRC Address Pool Assignment
      permanent
    subscriber-vlan  - Dynamic Auto-sensed Vlan
      permanent
    subscriber-ip    - Dynamic and Static IP
      permanent
```

show system license installed

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

```
  License identifier: XXXXXXXXXX
  License version: 2
  Features:
    subscriber-accounting - Per Subscriber Radius Accounting
      permanent
    subscriber-authentication - Per Subscriber Radius Authentication
      permanent
    subscriber-address-assignment - Radius/SRC Address Pool Assignment
      permanent
    subscriber-vlan  - Dynamic Auto-sensed Vlan
      permanent
    subscriber-ip    - Dynamic and Static IP
      permanent
```

show system license keys

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

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

show system license usage

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

```
License usage:
                               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
```

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: XXXXXXXXXX
  License version: 2
  Features:
    MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent
```

show system license installed (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

user@host > **show system license installed**

```
License identifier: XXXXXXXXXX
  License version: 2
  Features:
    MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent
```

show system license keys (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

user@host > **show system license keys**

```
XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxx
```

show system license usage (MX104 Routers)

In the following output, ports 0 and 1 are activated by installing the license to activate the first two built-in ports.

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

```
          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: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent

  License identifier: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade

      permanent
```

show system license installed (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

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

```
License identifier: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent

  License identifier: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade

      permanent
```

show system license keys (MX104 Routers)

In the following output, ports 2 and 3 are activated by installing the license to activate the next two built-in ports after installing the license to activate the first two built-in ports.

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

```
XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxx

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 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:
                               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: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent
   MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade

      permanent
```

show system license installed (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

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

```
License identifier: XXXXXXXXXX
  License version: 2
  Features:
   MX104-2x10Gig-port-0-1 - MX104 2X10Gig Builtin Port(xe-2/0/0 & xe-2/0/1) upgrade

      permanent
   MX104-2x10Gig-port-2-3 - MX104 2X10Gig Builtin Port(xe-2/0/2 & xe-2/0/3) upgrade

      permanent
```

show system license keys (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

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

```
XXXXXXXXX  xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
           xxxxxx xxxxxx x
```

show system license usage (MX104 Routers)

In the following output, ports 0,1,2, and 3 are activated by installing a single license key to activate all four built-in ports.

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

```
           Licenses     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:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                      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
  upgrade1                             0            1           0    2017-07-05
00:00:00 UTC

Licenses installed:
  License identifier: JUNOS797095
  License version: 4
  Software Serial Number: 91730A00223925
  Customer ID: Juniper
  Features:
    JUNOS-BASE-SERVICES-CLASS-1 - QFX Junos Base Services license for Class 1 HW
      date-based, 2016-07-01 00:00:00 UTC - 2017-07-02 00:00:00 UTC

  License identifier: JUNOS797646
  License version: 4
  Software Serial Number: 91730A00224207
  Customer ID: Juniper
  Features:
    CLASS-1-JUNOS-BASE-ADVANCED-UPGRADE - Class 1 Junos Base to Advanced Services
```

```
 Upgrade
      date-based, 2016-07-04 00:00:00 UTC - 2017-07-05 00:00:00 UTC

{master:0}
```

show system license key-content srx_1year_sub.lic

```
License Key Content:
  License Id: LICENSE-1
  License version: 4
  Valid for device: CW2716AF0740
  Features:
    idp-sig          - IDP Signature
      date-based, 2016-07-03 00:00:00 GMT - 2017-07-03 00:00:00 GMT
```

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) | 26

List of Sample Output

Output Fields

Table 8 on page 52 lists the output fields for the **show system license** command. Output fields are listed in the approximate order in which they appear.

Table 8: 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: • **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:
                              Licenses     Licenses    Licenses    Expiry
  Feature name                    used    installed      needed
  av_key_kaspersky_engine            1            1           0    2012-03-30
01:00:00 IST
  wf_key_surfcontrol_cpa             0            1           0    2012-03-30
01:00:00 IST
  dynamic-vpn                        0            1           0    permanent
  ax411-wlan-ap                      0            2           0    permanent
```

```
Licenses installed:
  License identifier: JUNOS301998
  License version: 2
  Valid for device: AG4909AA0080
  Features:
    av_key_kaspersky_engine - Kaspersky AV
      date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST

  License identifier: JUNOS302000
  License version: 2
  Valid for device: AG4909AA0080
  Features:
    wf_key_surfcontrol_cpa - Web Filtering
      date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST
```

show system license installed

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

```
License identifier: JUNOS301998
  License version: 2
  Valid for device: AG4909AA0080
  Features:
    av_key_kaspersky_engine - Kaspersky AV
      date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST

  License identifier: JUNOS302000
  License version: 2
  Valid for device: AG4909AA0080
  Features:
    wf_key_surfcontrol_cpa - Web Filtering
      date-based, 2011-03-30 01:00:00 IST - 2012-03-30 01:00:00 IST
```

show system license keys

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

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

show system license usage

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

```
                                Licenses     Licenses    Licenses  Expiry
Feature name                        used     installed      needed
  av_key_kaspersky_engine              1             1           0    2012-03-30
01:00:00 IST
  wf_key_surfcontrol_cpa               0             1           0    2012-03-30
01:00:00 IST
  dynamic-vpn                          0             1           0    permanent
  ax411-wlan-ap                        0             2           0    permanent
```

show system license status logical-system all

```
user@host> show system license status logical-system all
```

```
Logical system license status:

logical system name                license status
root-logical-system                enabled
LSYS0                              enabled
LSYS1                              enabled
LSYS2                              enabled
```

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 58

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 60

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 61
request system license update trial on page 62

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.

2

CHAPTER

Juniper Flex Program

Flex Software Subscription Model

IN THIS SECTION

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.

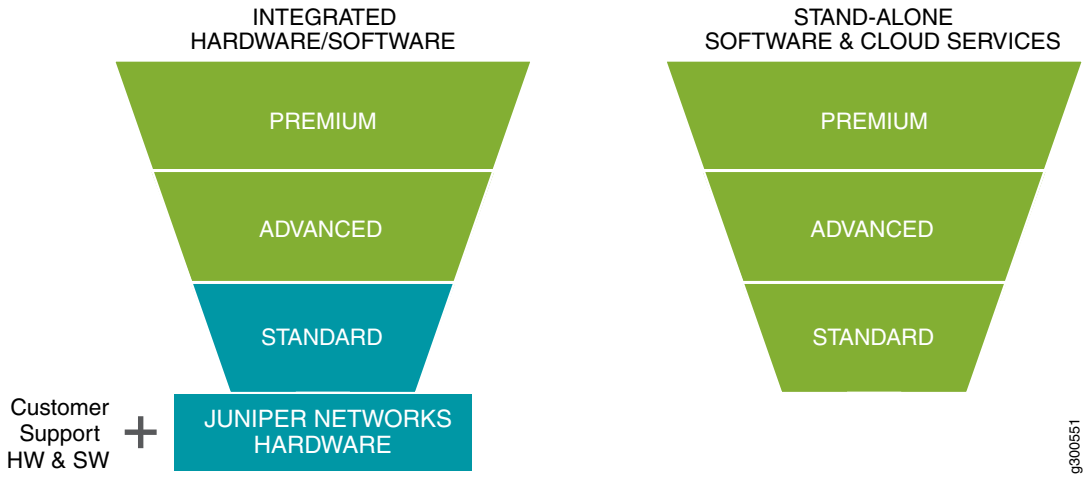
- **Advanced License**

  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 fulfilment, the subscription period begins after the completion of a 30-day grace period.

Table 9 on page 71 describes the subscription terms for purchase and number of months to use the license.

Table 9: 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.

3

CHAPTER

Licenses for Switching Devices

Licenses for EX Series

IN THIS SECTION

Understanding Software Licenses for EX Series Switches

IN THIS SECTION

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:

XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxx

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

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 10 on page 77 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 10: 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 Chassis
- Virtual Router Redundancy Protocol (VRRP)

Table 11 on page 78 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 11: 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

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 12 on page 79 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 12: 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 13 on page 80 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 13: 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 14 on page 81 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 14: 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 15 on page 81 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 15: 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 16 on page 82 lists the MACsec model number that you can purchase for EX3400 switch models.

Table 16: 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), and Link Fault Management (LFM))
- OSPFv2/v3
- Real-time perfomance monitoring (RPM)
- RIPng (RIPng is for RIP IPv6)
- Unicast reverse-path forwarding (RPF)
- Virtual Router
- Virtual Router Redundancy Protocol (VRRP)

Table 17 on page 82 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 17: Junos OS Part Number on EX4300 Switches

Switch Model	Part Number
EX4300-24T EX4300-24P	EX4300-24-EFL

Table 17: Junos OS Part Number on EX4300 Switches *(continued)*

Switch Model	Part Number
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 18 on page 83 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 18: 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 19 on page 84 lists the MACsec model number that you can purchase for EX4300 switch models.

Table 19: 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 20 on page 84 lists the AFLs that you can purchase for EX4600 switch models.

Table 20: 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 21 on page 85 lists the MACsec model number that you can purchase for EX4600 switch models.

Table 21: 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 22 on page 85 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 22: Junos OS Part Numbers on EX4650 Switches

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

Table 23 on page 85 lists the standard Junos OS features which require licenses on EX4650 switches.

Table 23: 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, 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), 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 24 on page 87 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 24: 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
EX9214	EX9214-AFL
EX9251	EX9251-AFL EX9251-ML

Table 24: Junos OS AFL Part Number on EX3200, EX4200, EX4500, EX4550, EX6200, EX8200, EX9200 and EX9250 Switches *(continued)*

Switch Model	AFL Part Number
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 25 on page 88 lists the MACsec model number that you can purchase for EX4200 and EX4550 switch models.

Table 25: 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" on page 75.

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

License Key Components for the EX Series Switch

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

A license key consists of two parts:

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

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

XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
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

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 90.

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: XXXXXXXXXX

  License version: 2

  Valid for device: XXXXXXXXXX

  Features:

    ex—series - Licensed routing protocols in ex-series

      permanent
```

Meaning

The output shows the license or licenses (for Virtual Chassis deployments) installed on the switch and license usage. Verify the following information:

- If a feature that requires a license is configured (used), a license is installed on the switch. The **Licenses needed**d 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 xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
         xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
         xxxxxx xxxxxx xxx
```

Meaning

The output shows the license key or keys (for Virtual Chassis deployments) installed on the switch. Verify that each expected license key is present.

Licenses for QFX Series

IN THIS SECTION

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 96 and "Disaggregated Software Features That Require Licenses on the QFX Series" on page 102.
- 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 | 96

Locating the Serial Number on a QFX3500 Device or Component

Software Features That Require Licenses on the QFX Series

At this time, the standard Junos OS software shipped on the hardware platform includes a perpetual base license, and this license is valid for the life of the hardware platform. This means there is no need to actually install the perpetual base license on the QFX switch. For information regarding newer subscription based licenses, including platforms supported, see Juniper Flex Program. For information about how to purchase any software license, contact your Juniper Networks sales representative, or an approved Juniper Partner.

Table 26 on page 96 lists the standard Junos OS features which require licenses on QFX Series Switches. For information on disaggregated Junos OS feature licenses on the QFX5200-32C switch, see "Disaggregated Software Features That Require Licenses on the QFX Series" on page 102.

Table 26: Software Features which Require Licenses on QFX Series 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 26: Software Features which Require Licenses on QFX Series 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 only for QFX5100-24Q/96S/48S/48T, QFX5110-32Q/48S, and QFX5200-32C/48Y switches.		
Virtual Router		
VRRP		
VRRPv6		

Table 26: Software Features which Require Licenses on QFX Series Switches *(continued)*

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

Table 27 on page 98 lists the base, premium and advanced features license SKUs for Series Switches.

Table 27: Base, Premium, and Advanced License SKUs for QFX Series Switches

QFX Series Switches	License SKUs Required for Base Features	License SKUs Required for Premium Features	License SKUs Required for Advanced Features
QFX5100-48S/48T	Base	QFX-JSL-EDGE-ADV1	QFX-JSL-EDGE-ADV1
QFX5100-24Q/96S	Base	QFX5100-HDNSE-LIC	QFX5100-HDNSE-LIC
QFX5110-32Q/48S	Base	QFX5K-C1-PFL	QFX5K-C1-AFL
QFX5120-48Y	Base	QFX5K-C1-PFL	QFX5K-C1-AFL
QFX5200-48Y	Base	QFX5K-C1-PFL	QFX5K-C1-AFL
QFX5200-32C	QFX5000-35-JBS	QFX5000-35-JAS QFX5000-35-JAS includes the features supported on QFX5000-35-JBS.	QFX5000-35-JPS QFX5000-35-JPS includes the features supported on QFX5000-35-JBS and QFX5000-35-JAS.
QFX5210-64C	Base	QFX5K-C2-PFL	QFX5K-C2-AFL
QFX10002-60C	Base	QFX10002-60C-PFL	QFX10002-60C-AFL
QFX10002-36Q	Base	QFX10002-36Q-PFL	QFX10002-36Q-AFL
QFX10002-72Q	Base	QFX10002-72Q-PFL	QFX10002-72Q-AFL
QFX10008	Base	QFX10008-PFL	QFX10008-AFL
QFX10016	Base	QFX10016-PFL	QFX10016-AFL

- 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.
- Virtual Extensible Local Area Network (VXLAN) is not supported on QFX3500 and QFX3600 devices. When you issue the **show licenses** command, you will see VXLAN in the CLI output, but the feature is not enabled.
- 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 28 on page 99 describes the licenses required for QFX series switches:

Table 28: Licenses Required for QFX Series Switches

Licence	Description	Number of Licenses Required	QFX Devices Supported
Base	Features included with the switch - No License required	-	-
QFX-JSL-EDGE-ADV1	QFX Series Edge Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX3500, QFX3600, QFX5100-48S, QFX5100-48T
QFX5100-HDNSE-LIC	QFX5100-24Q and QFX5100-96S Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5100-24Q , QFX5100-96S
QFX5K-C1-PFL	QFX5000 Class 1 Premium Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5110-32Q, QFX5110-48S, QFX5120-48Y, QFX5200-48Y
QFX5K-C1-AFL	QFX5000 Class 1 Advanced Feature License	One per switch, two per Virtual Chassis, and two per Virtual Chassis Fabric	QFX5110-32Q, QFX5110-48S, QFX5120-48Y, QFX5200-48Y
QFX5K-C2-PFL	QFX5000 Class 2 Premium Feature License	One per switch	QFX5210-64C

Table 28: Licenses Required for QFX Series Switches *(continued)*

Licence	Description	Number of Licenses Required	QFX Devices Supported
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
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

Table 28: Licenses Required for QFX Series Switches *(continued)*

Licence	Description	Number of Licenses Required	QFX Devices Supported
QFX10016-AFL	QFX10016 Advanced Feature License	One per switch	QFX10016
QFX-JSL-DRCTR-ADV1	QFX Series Control Advanced feature license 1	One per Node device in a network Node group	QFX3100 Director device
QFX-JSL-EDGE-FC	QFX Series Edge feature license for Fibre Channel	One per switch on which fibre channel ports are configured	QFX3500
QFX-JSL-DRCTR-FC	QFX Series Control Feature License for Fibre Channel	One per QFX3500 Node device on which fibre channel ports are configured	QFX3100 Director device
QFX-JSL-DRCTR-FC-C16	QFX Series Control Feature License for Fibre Channel Capacity 16	One for up to 16 QFX3500 Node devices on which fibre channel ports are configured	QFX3100 Director device
QFX3000-JSL-EDGE-FAB	QFX3000 Series QFabric /Node Feature License	One per device	QFX3100 Director device
QFX3008-JSL-DRCTR-FAB	QFX3000-G Base Fabric Software	One per QFX3000-G QFabric system	QFX3000-G
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 *Understanding Media Access Control Security (MACsec)*	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.

Table 28: Licenses Required for QFX Series Switches *(continued)*

Licence	Description	Number of Licenses Required	QFX Devices Supported
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) entires 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
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 96.

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 29: 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 96.
- 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 30 on page 106 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 30 on page 106 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 96.

Table 30: 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 • QFX5100-48SH-AFI • QFX5100-48TH-AFO • QFX5100-48TH-AFI	QFX10K-C1-JFS-1 QFX10K-C1-JFS-4 QFX10K-C1-JFS-8 QFX10K-C1-JFS-16 QFX10K-C1-JFS-32 QFX10K-C1-JFS-64

SEE ALSO

Generating License Keys | 94

4

CHAPTER

Licenses for Routing Devices

Licenses for PTX, MX, M and T Series

IN THIS SECTION

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

Table 31 on page 109 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 31: 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

Table 31: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 fucntionality 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
Chassis license for IDP service, policy enforcement. This license includes S-AI and S-LDPF fucntionality 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

Table 31: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Link Services Software Ugrade 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 Ugrade 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
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

Table 31: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Subscriber Access Feature Pack License Scaling (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
Subscriber Service Management Feature Packet License (RADIUS/SRC based Service Activation and Deactivation) Per-Service Accounting Features for Subscribers	MX104, MX240, MX480, MX960, M120, and M320	S-SSM-FP
Subscriber Traffic Lawful Intercept Feature Pack License	MX240, MX480, MX960, M120, M320, and MX80	S-SSP-FP
Software license for application aware traffic direct feature	MX240, MX480, MX960, M120, and M320	S-TFDIRECT-APP
Software license for subscriber aware traffic direct feature	MX240, MX480, MX960, M120, and M320	S-TFDIRECT-SUB
Video Services Feature Pack license	M120, M320, MX80, MX104, MX240, MX480, and MX960	S-VIDEO-FP

Table 31: Junos OS Feature License Model Number for M Series, MX Series, and T Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 32 on page 114 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 32: 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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 32: 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 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
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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
License to support scaling Layer 3 and VPN routes to 1 million or more entries on MX104 platforms	MX104	S-MX104-ADV-R2
License to support full-scale Layer 3 routes and Layer 3 VPN on each slot for MPC-3D-16XGE-SFPP	MX240, MX480, MX960, MX2010, and MX2020	S-MPC-3D-16XGE-ADV-R
License to support full-scale Layer 3 routes and Layer 3 VPN on each slot for port queuing MPCs	MX240, MX480, MX960, MX2010, and MX2020	S-MPC-3D-PQ-ADV-R

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

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

Table 32: Junos OS Feature License Model Number for MX Series Routers *(continued)*

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

Software Features That Require Licenses on M Series Routers Only

Table 33 on page 123 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 33: 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
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 34 on page 124 describes the two license variants for the PTX1000.

Table 34: License Variants for the PTX1000

License	Description	Scale Restictions
IR	Scaled up LSR and peering	• 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 35 on page 124 describes the two license variants for the PTX3000 and PTX5000.

Table 35: License Variants for the PTX3000 and PTX5000 FPCs

License	Description	Scale Restrictions
IR	Scaled up LSR and peering	• 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 36 on page 126 describes the three license variants.

Table 36: License Variants for MPCs

License	How to Identify	Description
base	No special suffix in the license name.	• 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.	• 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 126

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 do 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

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

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

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 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 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 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 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
...
```

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 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 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 5 on page 23 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 37: 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 6 on page 25.

Table 38: 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 6 on page 25 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 39 on page 138 describes number of subscriber interface and license required on subscriber access models.

Table 39: 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 Termnation (PWHT) DHCPv4	1
PWHT PPPoEv4	1
PWHT Dual Stack DHCP	1 (single SDB session) 2 (dual SDB session)
PWHT Dual Stack PPPoE	1
Agent circuit identifier (ACI) DHCPv4	Number of sessions with same ACI
ACI PPPoEv4	Number of sessions with same ACI
Layer 2 Tunneling Protocol (L2TP) Point-to-Point Protocol (PPP) or L2TP access concentrator (LAC)	1
L2TP Point-to-Point Protocol (PPP) or L2TP network server (LNS)	1
L2TP Dual Stack PPP or LNS	1
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)

Table 39: Number of Licenses Required per Access Model *(continued)*

Access Model	Number of Licenses Required
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 | 145

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 | 143

License Configuration

IN THIS SECTION

Installing Junos OS Licenses on Virtual Chassis Member Routers

IN THIS SECTION

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:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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 | 126
- Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers | 127
- Software Features That Require Licenses on MX Series Routers Only | 113

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

IN THIS SECTION

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 | 126
- Configuring the License Mode for Specific Enhanced MPCs on MX Series Routers | 127
- Software Features That Require Licenses on MX Series Routers Only | 113

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 vMX

IN THIS SECTION

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 40 on page 147describes the features available with application packages.

Table 40: 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 41 on page 148 describes the features available with application packages.

Table 41: Application Packages for Licenses

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

Table 42 on page 149 describes the queuing licenses.

Table 42: 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 43: 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

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
XXXXXXX 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:
                            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
  VMX-BANDWIDTH                 40000        40000           0    permanent
  VMX-SCALE                         3            3           0    permanent

Licenses installed:
  License identifier: JUNOS640113
  License version: 4
  Software Serial Number: XXXXXXX
  Customer ID: vMX-Juniper
  Features:
    vmx-bandwidth-40g - vmx-bandwidth-40g
      permanent
    vmx-feature-premium - vmx-feature-premium
      permanent
```

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

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

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

Deleting a License

To delete a vMX license:

1. Display the installed licenses.

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

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

2. Delete the license.

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

   For example:

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

3. Verify that the license is deleted.

   user@vmx> **show system license**

```
License usage:
                           Licenses     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.

5

CHAPTER

Licenses for Security Devices

Licenses for SRX Series

IN THIS SECTION

Software Feature Licenses for SRX Series Devices

IN THIS SECTION

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 44 on page 158 lists the licenses you can purchase for each SRX Series software feature.

Table 44: 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 SRX110	SRX100-APPSEC-A-1 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

Table 44: SRX100 and SRX110 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX100 SRX110	SRX1XX-IDP SRX1XX-IDP-3
Kaspersky antivirus (1 year and 3 years subscription)	SRX100 SRX110	SRX1XX-K-AV 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 SRX110	SRX1XX-SMB4-CS SRX1XX-SMB4-CS-3
Sophos antispam (1 year and 3 years subscription)	SRX100 SRX110	SRX1XX-S2-AS SRX1XX-S2-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX100 SRX110	SRX1XX-S-AV 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 SRX110	SRX1XX-S-SMB4-CS SRX1XX-S-SMB4-CS-3
Websense Enhanced Web Filtering (1 year and 3 years subscription)	SRX100 SRX110	SRX1XX-W-EWF SRX1XX-W-EWF-3

Features Requiring a License on SRX210 Devices

Table 45 on page 159 lists the licenses you can purchase for each SRX Series software feature.

Table 45: 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

Table 45: SRX210 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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 46 on page 161 lists the licenses you can purchase for each SRX Series software feature.

Table 46: 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
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

Table 46: SRX220 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Sophos antivirus, Enhanced Web Filtering, Sophos antispam, Application Security and Intrusion Detection and Prevention (1 year and 3 years subscription)	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 47 on page 162 lists the licenses you can purchase for each SRX Series software feature.

Table 47: 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
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX240	SRX240-IDP SRX240-IDP-3

Table 47: SRX240 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 48 on page 163 lists the licenses you can purchase for each SRX Series software feature.

Table 48: 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 48: 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 48: 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 49 on page 165 lists the licenses you can purchase for each SRX Series software feature.

Table 49: 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 50 on page 166 lists the licenses you can purchase for each SRX Series software feature.

Table 50: 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 51 on page 167 lists the licenses you can purchase for each SRX Series software feature.

Table 51: 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 52 on page 168 lists the licenses you can purchase for each SRX Series software feature.

Table 52: 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 52: 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 52: 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 53 on page 170 lists the licenses you can purchase for each SRX Series software feature.

Table 53: 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

Table 53: SRX650 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Dynamic VPN (500 Concurrent users, PulseSecure)	SRX650	SRX-RAC-500-LTU
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 54 on page 171 lists the licenses you can purchase for each SRX Series software feature.

Table 54: 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

Table 54: SRX1400 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)	SRX1400	SRX1400-W-EWF-1 SRX1400-W-EWF-3
Intrusion Detection and Prevention (1 year and 3 years subscription)	SRX1400	SRX1400-IDP SRX1400-IDP-3
Sophos antispam (1 year and 3 years subscription)	SRX1400	SRX1400-S-AS-1 SRX1400-S-AS-3
Sophos antivirus (1 year and 3 years subscription)	SRX1400	SRX1400-S-AV-1 SRX1400-S-AV-3
SRX Content Security (1 Incremental Logical Systems License for NetSecure)	SRX1400	SRX-1400-LSYS-1

Features Requiring a License on SRX1500 Devices

Table 55 on page 172 lists the licenses you can purchase for each SRX Series software feature.

Table 55: SRX1500 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)	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

Table 55: SRX1500 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)	SRX1500	SRX1500-CS-BUN-1 SRX1500-CS-BUN-3 SRX1500-CS-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-W-EWF-1 SRX1500-W-EWF-3 SRX1500-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-IPS-1 SRX1500-IPS-3 SRX1500-IPS-5
Logical System License (1, 5, and 25 Incremental)	SRX1500	SRX-1500-LSYS-1 SRX-1500-LSYS-5 SRX-1500-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX1500	SRX-RA1-5
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

Table 55: SRX1500 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-THRTFEED-1 SRX1500-THRTFEED-3 SRX1500-THRTFEED-5
Sky Advanced Threat Protection (1 year, 3 years and 5 years subscription)	SRX1500	SRX1500-ATP-1 SRX1500-ATP-3 SRX1500-ATP-5

Features Requiring a License on SRX3400 Devices

Table 56 on page 174 lists the licenses you can purchase for each SRX Series software feature.

Table 56: 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

Table 56: SRX3400 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Logical System License (1, 5, and 25 Incremental)	SRX3400	SRX-3400-LSYS-1 SRX-3400-LSYS-5 SRX-3400-LSYS-25
Sophos antispam (1 year and 3 year subscription)	SRX3400	SRX3400-S-AS-1 SRX3400-S-AS-3
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 57 on page 175 lists the licenses you can purchase for each SRX Series software feature.

Table 57: 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

Table 57: SRX3600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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 58 on page 176 lists the licenses you can purchase for each SRX Series software feature.

Table 58: SRX4100 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-ATP-BUN-1 SRX4100-ATP-BUN-3 SRX4100-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-CS-BUN-1 SRX4100-CS-BUN-3 SRX4100-CS-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-A-BUN-1 SRX4100-A-BUN-3 SRX4100-A-BUN-5

Table 58: SRX4100 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)	SRX4100	SRX4100-W-EWF-1 SRX4100-W-EWF-3 SRX4100-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX4100	SRX4100-IPS-1 SRX4100-IPS-3 SRX4100-IPS-5
Logical System License (1, 5, and 25 Incremental)	SRX4100	SRX-4100-LSYS-1 SRX-4100-LSYS-5 SRX-4100-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX4100	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX4100	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX4100	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX4100	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX4100	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX4100	SRX-RA1-150
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

Table 58: SRX4100 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Sky Advanced Threat Prevention Threat Intelligence Feeds only (1 year, 3 years and 5 years subscription)	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 59 on page 178 lists the licenses you can purchase for each SRX Series software feature.

Table 59: 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

Table 59: SRX4200 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 59: SRX4200 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)	SRX4200	SRX4200-ATP-1 SRX4200-ATP-3 SRX4200-ATP-5

Features Requiring a License on SRX4600 Devices

Table 60 on page 180 lists the licenses you can purchase for each SRX Series software feature.

Table 60: SRX4600 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)	SRX4600	SRX4600-ATP-BUN-1 SRX4600-ATP-BUN-3 SRX4600-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-CS-BUN-1 SRX4600-CS-BUN-3 SRX4600-CS-BUN-5
Application Security, Intrusion Detection and Prevention, Enhanced Web Filtering, and Avira antivirus (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-A-BUN-1 SRX4600-A-BUN-3 SRX4600-A-BUN-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-W-EWF-1 SRX4600-W-EWF-3 SRX4600-W-EWF-5
Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX4600	SRX4600-IPS-1 SRX4600-IPS-3 SRX4600-IPS-5

Table 60: SRX4600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
Logical System License (1, 5, and 25 Incremental)	SRX4600	SRX-4600-LSYS-1 SRX-4600-LSYS-5 SRX-4600-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX4600	SRX-RA1-5
Remote Access (10 Concurrent users, NCP)	SRX4600	SRX-RA1-10
Remote Access (25 Concurrent users, NCP)	SRX4600	SRX-RA1-25
Remote Access (50 Concurrent users, NCP)	SRX4600	SRX-RA1-50
Remote Access (100 Concurrent users, NCP)	SRX4600	SRX-RA1-100
Remote Access (150 Concurrent users, NCP)	SRX4600	SRX-RA1-150
Remote Access (250 Concurrent users, NCP)	SRX4600	SRX-RA1-250
Remote Access (500 Concurrent users, NCP)	SRX4600	SRX-RA1-500
Remote Access (1000 Concurrent users, NCP)	SRX4600	SRX-RA1-1000
Remote Access (2000 Concurrent users, NCP)	SRX4600	SRX-RA1-2000
Remote Access (5000 Concurrent users, NCP)	SRX4600	SRX-RA1-5000
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 61 on page 182 lists the licenses you can purchase for each SRX Series software feature.

Table 61: 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
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

Table 61: SRX5400 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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 62 on page 184 lists the licenses you can purchase for each SRX Series software feature.

Table 62: SRX5600 Junos OS Feature License Model Number

Licensed Software Feature	Supported Devices	Model Number
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Sky Advanced Threat Prevention (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-ATP-BUN-1 SRX5600-ATP-BUN-3 SRX5600-ATP-BUN-5
Application Security, Intrusion Prevention Signatures, Enhanced Web Filtering, Antivirus and Antispam (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-CS-BUN-1 SRX5600-CS-BUN-3 SRX5600-CS-BUN-5
Application Security and Intrusion Prevention Signature (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-APPSEC-A-1 SRX5600-APPSEC-A-3 SRX5600-APPSEC-A-5
Enhanced Web Filtering (1 year, 3 years and 5 years subscription)	SRX5600	SRX5600-W-EWF-1 SRX5600-W-EWF-3 SRX5600-W-EWF-5
Intrusion Detection and Prevention (1 year, 3 years and 5 years subscription)	SRX5600	SRX5K-IDP SRX5K-IDP-3 SRX5K-IDP-5
Logical System License (1, 5, and 25 Incremental)	SRX5600	SRX-5600-LSYS-1 SRX-5600-LSYS-5 SRX-5600-LSYS-25
Remote Access (5 Concurrent users, NCP)	SRX5600	SRX-RA1-5
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

Table 62: SRX5600 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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 63 on page 185 lists the licenses you can purchase for each SRX Series software feature.

Table 63: 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

Table 63: SRX5800 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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
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

Table 63: SRX5800 Junos OS Feature License Model Number *(continued)*

Licensed Software Feature	Supported Devices	Model Number
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

   ```
   - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
   -
   Initiated manual failover for redundancy group 0
   ```

   NOTE: Initiating a failover to the secondary node is not required if you are installing licenses manually on the device. However, if you are installing the license directly from the Internet, you must initiate a failover.

2. Repeat the steps described in “Step-by-Step Procedure” on page 188 to install licenses on the secondary node.

3. Reboot the device for licenses to take effect.

NOTE: You must install the updated license on both nodes of the chassis cluster before the existing license expires.

NOTE: In a chassis cluster configuration, when one device has a license installed, and the other device does not have the same license installed, an error message is displayed when you try to configure that specific feature as shown in the following example:

[edit security utm feature-profile web-filtering type]

```
   'type juniper-enhanced'
    warning: requires 'wf_key_websense_ewf' license   <<<<<<<<<<<<<<<<<<<<<<<
configuration check succeeds
```

TIP: If you are not using any specific feature or license , you can delete the license from both devices in a chassis cluster. You need to connect to each node separately to delete the licenses. For details, see “Example: Deleting a License Key” on page 207.

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

```
                    Licenses  Licenses     Licenses   Expiry
  Feature name      used      installed    needed
  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 64: 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:
                    Licenses     Licenses    Licenses   Expiry
  Feature name         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://ae1.juniper.net, use 'show system
  license' to check status.
  ```

- Install the licenses manually on the device.

  ```
  user@host> request system license add terminal
  ```

  ```
  [Type ^D at a new line to end input,
   enter blank line between each license key]
  ```

  Paste the license key and press Enter to continue.

- Verify the license is installed on your device.

  Use the **show system license command** command to view license usage, as shown in the following example:

```
License usage:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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) | 26

Managing Junos OS Licenses

IN THIS SECTION

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 | 19

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 | 187

Understanding Licenses for Logical Systems and Tenant Systems on SRX Series Devices | 192

Example: Adding a New License Key

IN THIS SECTION

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
```

```
                        Licenses     Licenses    Licenses    Expiry
Feature name             used       installed      needed
bgp-reflection              1            1           0     permanent
```

The output shows a list of the licenses installed on the device and how they are used.

Verifying Installed License Keys

Purpose

Verify that the license keys were installed on the device.

Action

From operational mode, enter the **show system license keys** command.

```
user@hostname> show system license keys
```

```
XXXXXXXXXX xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
             xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
             xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
             xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
```

The output shows a list of the license keys installed on the device. Verify that each expected license key is present.

Example: Deleting a License Key

IN THIS SECTION

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

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

IN THIS SECTION

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:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  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: 9XXXXAXXXXXXX9
  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 65 on page 211 lists vSRX evaluation license types.

Table 65: 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 requires 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 (á 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 2 on page 213 shows a sample license SKU and identifies how each field maps to these categories.

Figure 2: 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 (á 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 eeeeee ffffff
      cccccc bbbbbb dddddd aaaaaa ffffff aaaaaa
      aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
      cccccc bbbbbb dddddd aaaaaa ffffff
```

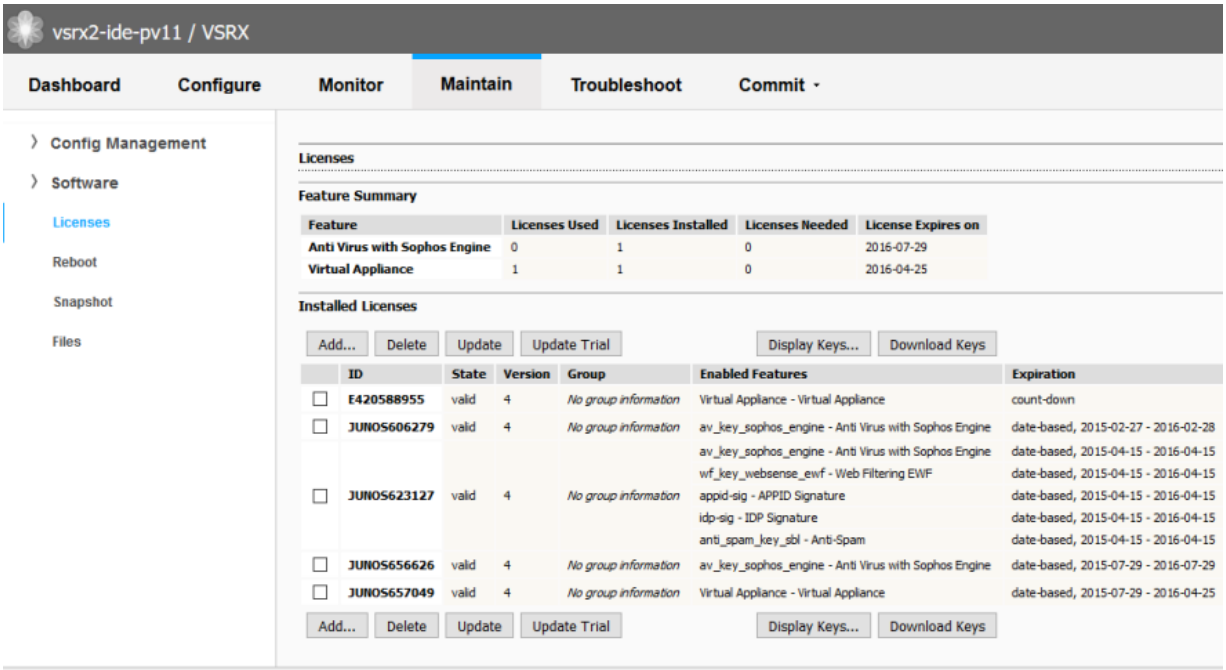
The license data conveys the customer ID and the software serial number (Juniper Networks support reference number) to the vSRX instance.

License Management Fields Summary

The Licenses window displays a summary of licensed features that are configured on the vSRX instance and a list of licenses that are installed on the vSRX instance.

To view the license details, select **Maintain>Licenses** in the J-Web user interface. The Licenses window appears as shown in Figure 3 on page 215.

Figure 3: J-Web Licenses Window Showing Installed Licenses



You can also view the details of a license in the CLI using the **show system license** command. The following sample shows details of an evaluation license in the CLI:

```
License usage:
                                Licenses     Licenses    Licenses    Expiry
  Feature name                       used    installed      needed
  anti_spam_key_sbl                     0            1           0    2016-04-15
08:00:00 CST
  idp-sig                               0            1           0    2016-04-15
08:00:00 CST
  appid-sig                             0            1           0    2016-04-15
08:00:00 CST
  av_key_sophos_engine                  0            3           0    2016-07-29
08:00:00 CST
  wf_key_websense_ewf                   0            1           0    2016-04-15
08:00:00 CST
  Virtual Appliance                     1            1           0    2016-04-25
08:00:00 CST

Licenses installed:
  License identifier: E420588955
  License version: 4
  Software Serial Number: 20150625
  Customer ID: vSRX-JuniperEval
  Features:
    Virtual Appliance - Virtual Appliance
      count-down, Original validity: 60 days
```

The information on the license management page is summarized in Table 4 on page 20.

Table 66: Summary of License Management Fields

Field Name	Definition
Feature Summary	
Feature	Name of the licensed feature: • **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.

Table 66: Summary of License Management Fields *(continued)*

Field Name	Definition
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.
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

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 220).

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.

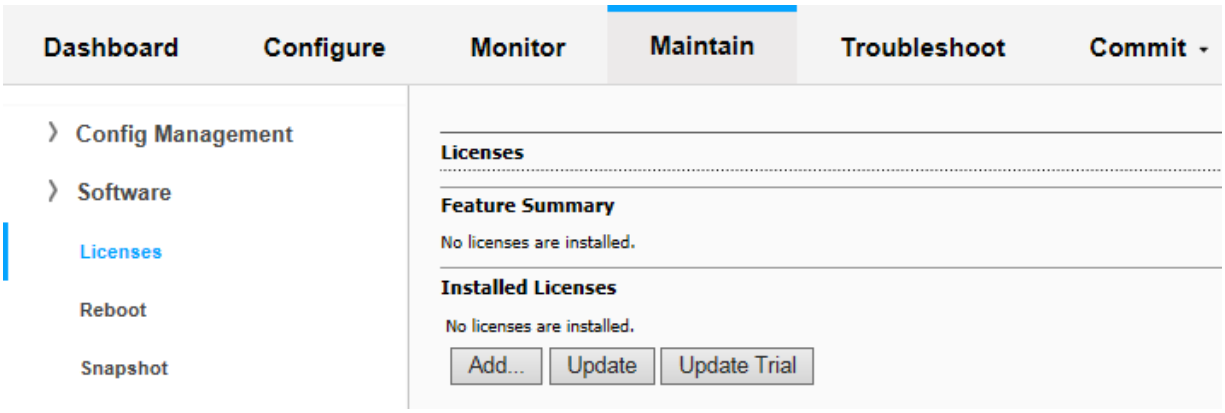
For details about the 60- and 30-day license evaluation periods for the vSRX see "vSRX Feature Licenses Overview" on page 209 .

Adding a New License Key with J-Web

To install a license using the J-Web interface:

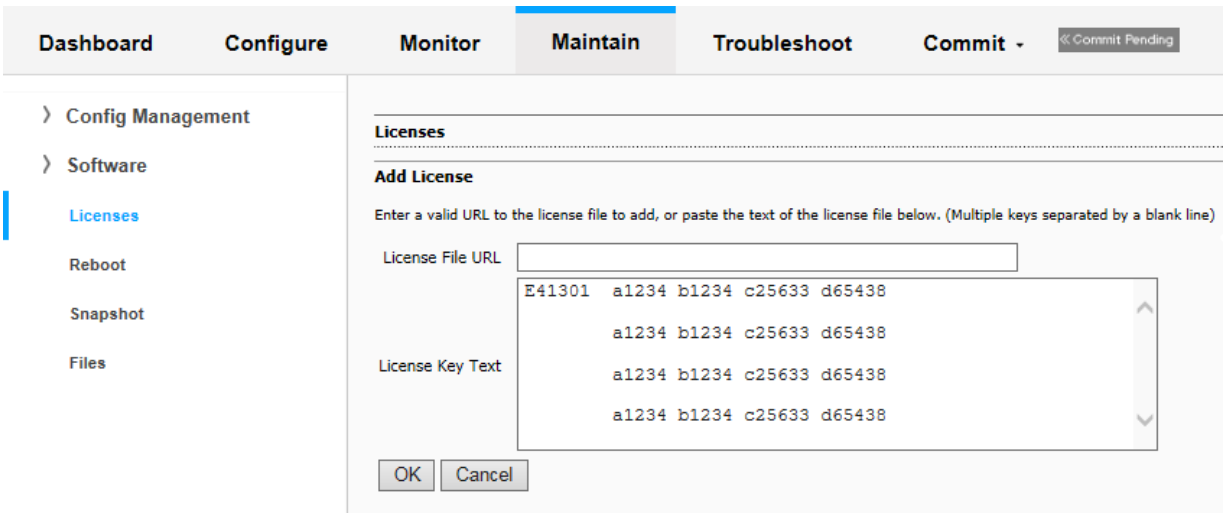
1. Select **Maintain>Licenses** on the J-Web user interface. The Licenses window is displayed as shown in Figure 4 on page 219.

Figure 4: J-Web Licenses Window



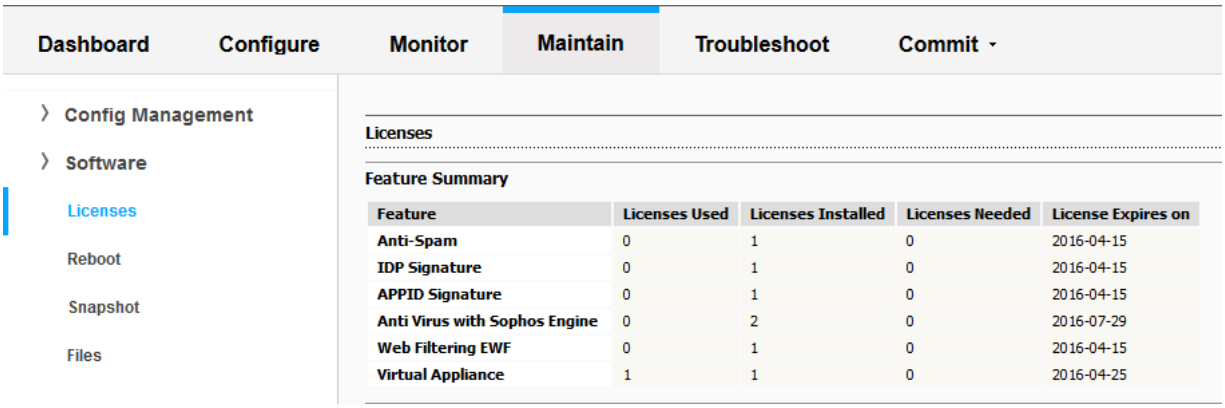
2. Under Installed Licenses, click **Add**. The Add License window is displayed as shown in Figure 5 on page 220.

Figure 5: 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 6 on page 220.

Figure 6: License Details Window



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]

   E413XXXX57  aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
         cccccc bbbbbb dddddd aaaaaa ffffff aaaaaa
         aaaaaa bbbbbb cccccc dddddd eeeeee ffffff
         cccccc bbbbbb dddddd aaaaaa ffffff

   E413XXXX57: 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.

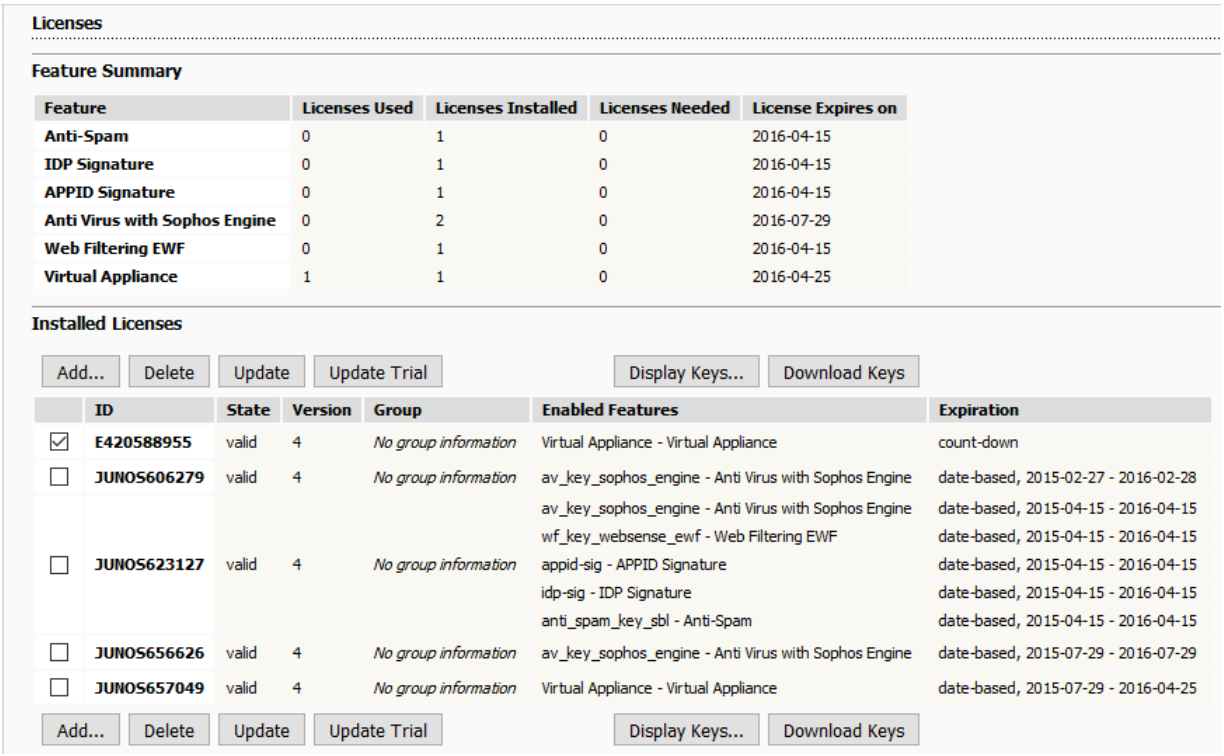
Deleting a License with J-Web

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 7 on page 223.

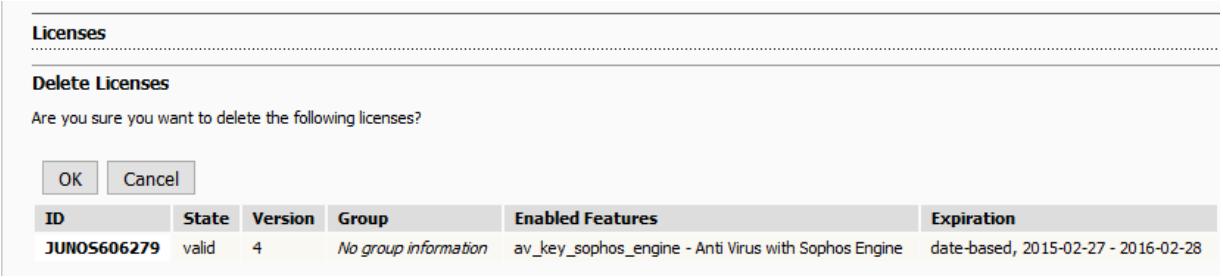
Figure 7: Deleting a License



3. Click **Delete**.

4. Click **OK** to confirm your deletion as shown in Figure 8 on page 224.

Figure 8: Delete Licenses Window



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 9 on page 71 describes the subscription terms for purchase and number of months to use the license.

Table 67: Subscription Terms Details

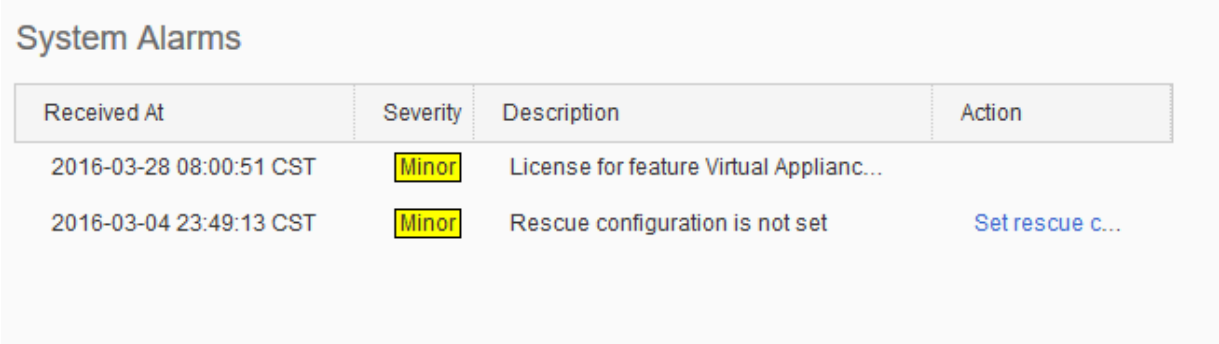
Subscription Terms	Number of Months for the License
1 year	13 months
3 years	37 months
5 years	61 months

All subscription licenses are renewable. To renew a subscription license, purchase a new subscription of the same license. For more information, see Subscription - Register and Install .

To use features that require a license, you must install and configure a license. After the license expires, warning messages are displayed in the system log and on the J-Web dashboard.

When a license expires, the System Alarms section of the J-Web dashboard displays a message stating that the license has expired as shown in Figure 9 on page 226.

Figure 9: J-Web Dashboard for License Expiry Warning



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 68 on page 227 describes the features available with the various license packages.

Table 68: vSRX Licensing Package Types

License Type	Description	License Model Number
STD	Includes the following features: • 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	These Standard (STD) bandwidth SKUs are available for vSRX: • 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	Includes all STD features bundled with IPS and Appsecure signatures, along with the following features: • AppID • AppFW • AppQoS • AppTrack	These AppSecurity Bundled (ASB) bandwidth SKUs are available for vSRX: • 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 68: 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: • Antivirus • Content filtering • Web filtering	These Content Security Bundled (CSB) bandwidth SKUs are available for vSRX: • 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: • 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 69 on page 229 describes the features available with the various license packages.

Table 69: vSRX Licensing Package Types

License Type	Description	Duration
STD	Includes the following features: • 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	Both perpetual and subscription license options are available. See Table 70 on page 231 for STD bandwidth SKUs available for vSRX.
ASCB and ASECB	Includes all STD features bundled with the following additional AppSecure features: • AppID • AppFW • AppQoS • AppTrack	Subscription licenses only. See Table 71 on page 232 for bandwidth SKUs available for vSRX with AppSecure and IPS features.

Table 69: vSRX Licensing Package Types *(continued)*

License Type	Description	Duration
CS-B	Includes all STD features bundled with ASEC features and the addition of UTM capabilities: • Antispam • Antivirus • Content filtering • Web filtering	Subscription licenses only. See Table 73 on page 234 for CS-B bandwidth SKUs available for vSRX.
ATP-B	vSRX-1G-ATP-B bundle includes: • 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: • Sophos antivirus • Websense enhanced Web filtering • AppSecure and IPS • Content Security (CS)	Subscription licenses only. See Table 72 on page 233 for AppSecure and IPS SKUs available for vSRX. See Table 75 on page 236 for Sophos antivirus bandwidth SKUs available for vSRX. Table 76 on page 237 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 70 on page 231 lists the standard bandwidth licenses available for vSRX.

Table 70: 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 71 on page 232 lists the bandwidth licenses available for vSRX bundled with AppSecure and IPS features.

Table 71: 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 72 on page 233 lists the individual (a la cart) subscription licenses available for vSRX with AppSecure and IPS features.

Table 72: 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 73 on page 234 lists the Content Security Bundled (CSB) bandwidth licenses available for vSRX.

Table 73: 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 74 on page 235 lists the individual (a la carte) CS subscription licenses available for vSRX.

Table 74: 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 75 on page 236 lists the individual (a la carte) Sophos antivirus (S-AV) bandwidth licenses available for vSRX.

Table 75: 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 76 on page 237 lists the individual (a la carte) enhanced Web filtering (W-EWF) subscription licenses available for vSRX.

Table 76: 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 77 on page 237 lists the remote access licenses you can purchase for vSRX.

Table 77: 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 77: 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