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Juniper Agile Licensing Guide

Published
2021-03-26

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Juniper Agile Licensing Guide
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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

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at https://support.juniper.net/support/eula/. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

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3   **Managing Juniper Agile License Manager**

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About the Documentation

IN THIS SECTION

Juniper Networks introduced the Juniper Agile Licensing Portal to install and manage licenses for hardware and software features. Juniper Agile Licensing is the new and improved license management system to simplify the license management in a network.

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

defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
i	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.

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:
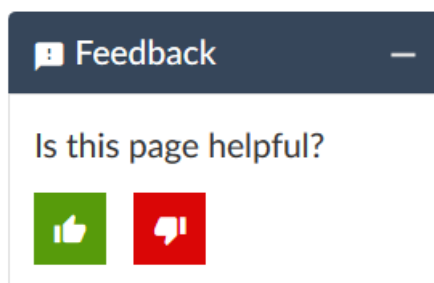
  • Click the thumbs-up icon if the information on the page was helpful to you.

  • 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/

Creating a Service Request with JTAC

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

- Visit https://myjuniper.juniper.net.

- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

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

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CHAPTER

Juniper Agile Licensing Overview

Juniper Agile Licensing Overview

SUMMARY

Learn about Juniper Agile Licensing, an improved license management system to activate, install, manage, and monitor licenses on Juniper Networks devices in a network.

Juniper Agile Licensing Overview

Benefits of Juniper Agile Licensing

- Provides an intuitive user experience and simplified operational processes.
- Provides seamless lifecycle management of licenses.
- Offers flexible license administration and deployment.
- Enables monitoring of software usage through centralized administrator and reporting.
- Allows users to proactively adjust usage based on real-time reporting.
- Provides consistent license management workflow for all Juniper products.

Understand Juniper Agile Licensing

Juniper Networks introduced the Juniper Agile Licensing solution to provide an efficient way for customers and partners to manage licenses for hardware and software features. To use a licensed feature, you need to purchase and activate a license that corresponds to that feature and deploy that license so that it can be utilized by the software during normal operation. You can administer and manage the licenses through the Juniper Agile Licensing Portal. The portal provides an intuitive task-based user interface that provides full lifecycle management of licenses.

Juniper Agile Licensing ensures that features are used in compliance with Juniper's End User License Agreement. There are currently two main modes for deploying licenses:

- Standalone mode allows you to activate a license on a single hardware device or software instance. Such a license can only be used by the instance on which it is activated. Sharing a license with multiple instances is not permissible.

- Network mode provides a centralized system for deploying licenses to a network of devices or software instances. The Juniper Agile License Manager software runs on your network and provides a local repository of licenses that are dynamically consumed by devices as required. License Manager also monitors license usage and can synchronize that usage data with Juniper to enable enhanced monitoring and compliance reporting.

Support for each deployment mode varies by product. Both deployment modes enable efficient management of both subscription and perpetual licenses and may enable combinations of features and capacity depending on the specific license purchased.

Components of Juniper Agile Licensing

shows the architecture of Juniper Agile Licensing.

Figure 1: Juniper Agile Licensing Workflow
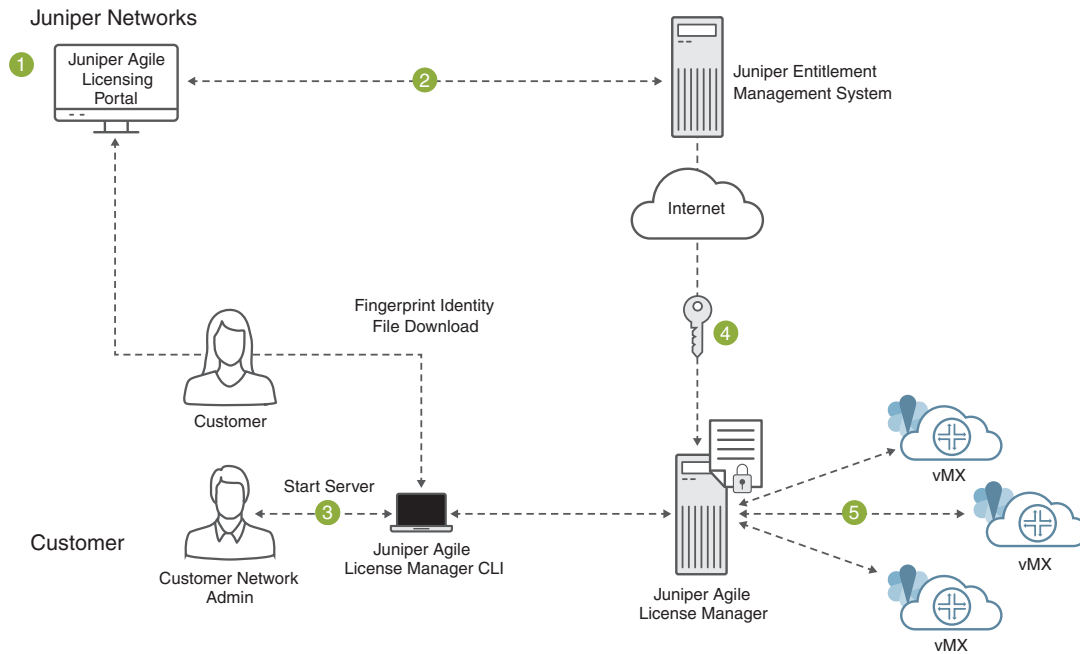
1. **Juniper Agile Licensing Portal**

   The Juniper Agile Licensing Portal provides the features shown in Figure 2 on page 14.

Figure 2: Juniper Agile Licensing Portal Features

Entitlements	Activations	RMA Tool
• View account-wide entitlements for your Juniper Networks products. • Display your software license purchases that are linked to your company account associations and awaiting activation.	• Activate quickly from the portal home page. • Activate from the My Entitlements section. • Download and send them through email. • View related information about activated entitlements.	• Transfer license keys from a defective to a replacement device.

You use the Juniper Agile Licensing Portal to activate and deliver the required license keys for products you have purchased.

Depending on the type of license, the fulfillment e-mail you receive from Juniper after purchase of a license indicates whether your device can be used without installing license keys. If you need to install license keys, you can view and activate the purchased entitlements in the Agile Licensing Portal.

> **NOTE:** In some cases, the fulfillment e-mail might include a license key, in which case it is not necessary to manage the entitlement through the Agile Licensing Portal.

2. **Juniper Entitlement Management System**

The Juniper Agile Entitlement Management System is a repository of all your entitlements. It simplifies the licensing life cycle by providing a centralized license management interface that you can access using the Agile Licensing Portal.

3. **Juniper Agile License Manager**

The Agile License Manager is a software application that runs on your network and provides a local repository of licenses that are dynamically consumed by devices as required. License Manager also monitors license usage and can synchronize that usage data with Juniper to enable enhanced monitoring and compliance reporting.

> **NOTE:** Redundancy is not used if only one Agile License Manager is configured. The configured Agile License Manager is the leader for the operations. Redundancy is enabled if more than one Agile License Manager is configured. One Agile License Manager act as a leader and all the other Agile License Managers acts as followers for all operations.

Juniper Agile License Manager CLI

You can start and stop the Juniper Agile License Manager through the CLI. You can also access additional administrative functions through the CLI.

Juniper Agile Licensing Workflow for Procuring and Managing Licenses

Procuring and Managing Licenses

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- Download, install, and configure Agile License Managers (including redundancy) | **17**
- Configure Network Devices to Use Agile License Managers | **17**
- Purchase Licenses from Juniper Networks | **17**
- Manage Entitlements using the Agile Licensing Portal | **18**

For procuring and managing licenses, Juniper Agile Licensing comprises the following phases:

The phases of the licensing life cycle are shown in .

Figure 3: Licensing Phases

Purchase
Sales
Outputs fulfillment email

Activate
JAL Portal or Support Page
Generates license keys

Email or Download
JAL Portal or Support Page
Not required for all products

Install
Device UI

Maintain
JAL Portal or Support Page and Device UI

Complex Maintenance	Basic Maintenance
• Downgrade	• Delete
• Transfer	• Save
• Upgrade	• Update
	• View

g200018
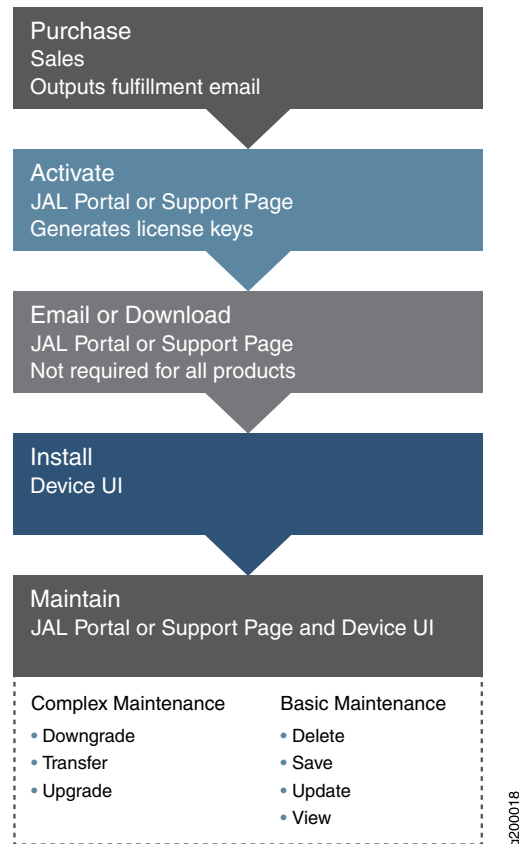
Download, install, and configure Agile License Managers (including redundancy)

You can download Juniper Agile License Manager software from Juniper's Software Download Web site. Install the Agile License Manager software on a physical server or virtual machine on your network, and establish a connection to the Agile Entitlement Management System through the public cloud. This connection is highly secure and requires only a single outgoing HTTPS port to be enabled. After installing the Agile License Manager software, configure individual Agile License Managers and Agile License Manager Redundancy Group (for redundancy) through the Agile Licensing Portal.

Log in to the Agile Licensing Portal to create a redundancy server group, download the fingerprint identity file, and associate the created redundancy server group with entitlements.

Configure Network Devices to Use Agile License Managers

Juniper devices and software applications dynamically obtain active license tokens from Agile License Managers. Configure the devices and software applications to communicate with the Agile License Managers within their network and to obtain the active license tokens.

Purchase Licenses from Juniper Networks

Licenses to use Juniper software are purchased through Juniper's standard sales order process. After meeting with your Sales Representative or Juniper Partner, submit a sales order to Juniper. License sales

order lines will send you an e-mail that includes your activation code and Software Support Reference Number (SSRN) relating to your entitlements. The system creates entitlements associated with your user account (e-mail ID) that you can subsequently manage through the Juniper Agile Licensing Portal.

Depending on the type of license, access the Agile Licensing Portal to activate license keys or send the keys by e-mail to yourself.

> **NOTE:** Keep a record of your SSRN, which is used as a proof of purchase and for support entitlement purposes.

Manage Entitlements using the Agile Licensing Portal

You use the information from the fulfillment e-mail to activate your entitlements. This process generates software license activation keys (license keys) that you can install on devices directly, or automatically synchronize to previously installed Agile License Managers.

> **NOTE:** Some software licenses can be only activated, and do not generate or require a license activation key to be installed on the device. Refer to the fulfillment e-mail that you receive after purchase for this information.

Juniper Agile License Management

IN THIS SECTION

-

Juniper Agile License Management

Table 3 on page 19 lists licensing tasks and links to procedures where you can perform those tasks. Complex tasks require you to use both the Juniper Agile Licensing portal (or Support page) and a user interface to the device.

Table 3: Licensing Tasks Used to Manage Your Licenses

Licensing Task	Link
View entitlements, activate products to generate licenses, and mail or download licenses. (Juniper Agile Licensing Portal or Support page)	Manage Product Licenses (select product to launch Juniper Agile Licensing Portal or Support page)
Enable network mode for Agile Licensing	Junos Configuration for Enabling Network License Mode
Install license keys on a device.	Adding a License
Delete license keys on a device.	Deleting a License

Licensing Models

Juniper Agile Licensing supports two models described in Table 4 on page 19.

Table 4: Juniper Agile Licensing Models

Licensing Model	Description
Subscription	Prepaid, term-based licenses that enable the right to use for a fixed duration. At the end of the subscription period, customers must renew the subscription or the license is deemed out of compliance.
Perpetual	Prepaid licenses that are activated in perpetuity for the life of the product or device.

Juniper Agile Licensing supports the license types described in Table 5 on page 20. Unless otherwise stated, license types apply to Juniper Networks customers and potential customers.

Table 5: Types of Juniper Agile Licenses

License Type	Purpose	Term
Production	Use in a production environment	Perpetual: In perpetuity Subscription: 1 or 3 years
Trial	Marketing of Juniper Networks products	90 days

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CHAPTER

Setting Up the Juniper Agile License Manager

Installing the Juniper Agile License Manager

System Requirements for the Juniper Agile License Manager

This section presents an overview of requirements for the Juniper Agile License Manager.

Software Specifications

Table 6 on page 22 lists the system software requirements specification for the Juniper Agile License Manager.

Table 6: Software Requirements for Agile License Manager

Operating System	Specification
Linux	Ubuntu Linux 16.*x* and later Linux VM or physical machine.

The Juniper Agile License Manager needs to be installed on a machine with access to internet. If there is a firewall Agile License Manager needs to have access to https://p1-ems.jnpr.sentinelcloud.com/YPServer URL.

Hardware Specifications

Table 7 on page 23 lists the hardware requirements specification for the Juniper Agile License Manager.

Table 7: Hardware Requirements for Juniper Agile License Manager

Component	Specification
Processor type	X86-64 processor and later
Hard disk space	200 MB
RAM	128 MB

Method of connecting to the Juniper Agile License Manager

Method of Connecting	Selecting Criteria	Junos OS Configuration
Broadcast Method Here the device will auto-discover available Agile License Manager in the subnet for fetching the license	• This method is applicable only if the devices and the Agile License Managers are in the same subnet. • If there is single Agile License Manager available in the local subnet then user can use this method, else, if there are more than one Agile License Managers in the subnet, then user cannot predict which Agile License Manager is connected to which device. • User can change the Agile License Managers at any time and no configuration changes are required in the device.	**# set system license network-mode**
Named License Manager Method In this method device will connected to the configured Agile License Manager	• This method is applicable if the Agile License Manager is outside the local subnet • This method can be used when user has multiple Agile License Manager groups within the subnet and user wants to have predictability with respect to the device's selection of Agile license Manager. • User is already aware which Agile License Manager to be used, then this method can be used.	**# set system license network-mode** **#set system license network-server address *server-address***

Downloading the Juniper Agile License Manager

The Juniper Agile License Manager is available for downloading from the Juniper Networks Support website at Juniper Agile License Manager. The package file is in **agile-license-manager-linux-x86-*X.X.X*.tgz** format.

The signed part of the filename indicates that the software is delivered in signed packages that contain digital signatures, Secure Hash Algorithm (SHA-1), and Message Digest 5 (MD5) checksums. A package is installed only if the checksum within it matches the hash recorded in its corresponding file.

All Juniper Networks software images are signed for validation. Extensions are **sh, tgz, gz, img, iso**, and so on.

The Juniper Agile License Manager package consists of various files such as **copyrights information, readme, license configuration, install, uninstall**.

Creating the License Manager Redundancy Group

To create a Licensing Manager Redundancy Group, perform the following steps:

1. Log in to the Juniper Agile Licensing Portal.

2. Click **License Managers**.

3. Click **Create Group**.

Figure 4: Juniper Agile Licensing Portal Home Page
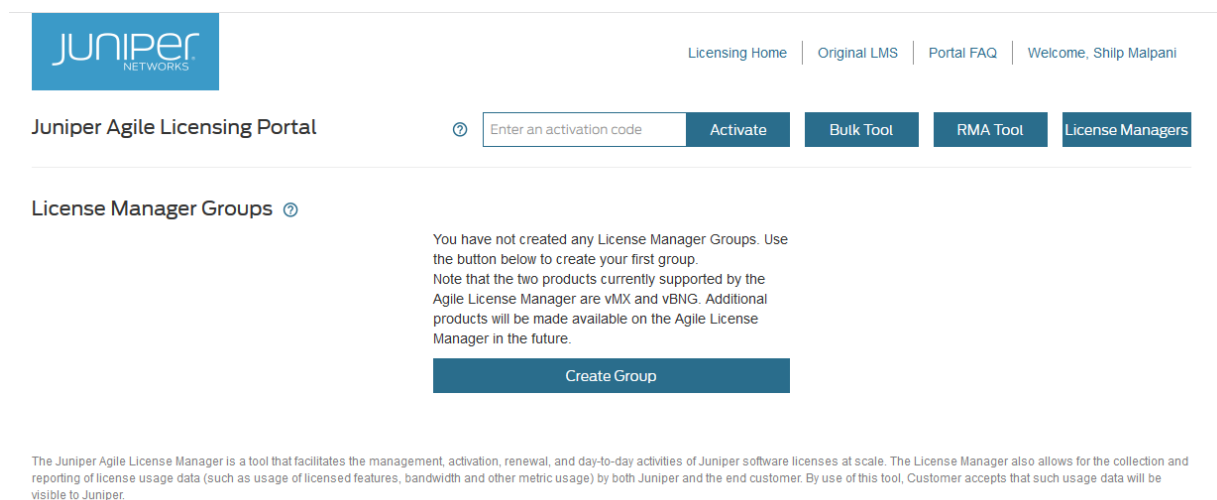
4. Enter the Agile License Manager Group name in the text box provided.

   Enter the names of the Agile License Managers you want to add to the group in the text boxes provided.

> **NOTE:** You can provide up to four Agile License Manager names for a redundancy group.

Figure 5: Create New License Manager Group

Create New License Manager Group ✕

License Manager Group Name ⓘ

Juniper Agile License Manager G

Associate up to 4 License Managers with this License Manager Group

License Manager Name

Juniper Agile License Manager 1

License Manager Name

Juniper Agile License Manager 2

License Manager Name

Juniper Agile License Manager 3

License Manager Name

The Juniper Agile License Manager is a tool that facilitates the management, activation, renewal, and day-to-day activities of Juniper software licenses at scale. The License Manager also allows for the collection and reporting of license usage data (such as usage of licensed features, bandwidth and other metric usage) by both Juniper and the end customer. By use of this tool, Customer accepts that such usage data will be visible to Juniper.

Cancel   **Create Group**

5. Click **Create Group** to create the License Manager Redundancy Group.

Downloading the Fingerprint Identity File

The fingerprint identity file is used for identification and entitling the desired software licenses to be deployed to your Juniper Agile License Manager.

> **NOTE:** To generate the fingerprint identity file, there must be an active License Manager Group.

To download the fingerprint identity file for your Agile License Manager, perform the following steps:

1. Log in to the Juniper Agile Licensing Portal.

2. Click **License Managers**. When the names of the **License Manager Groups** names are displayed, navigate to the License Manager group for which you want to download the fingerprint file.

3. Click **Download Fingerprint**.

Figure 6: Juniper Agile License Manager Group - Download Fingerprint
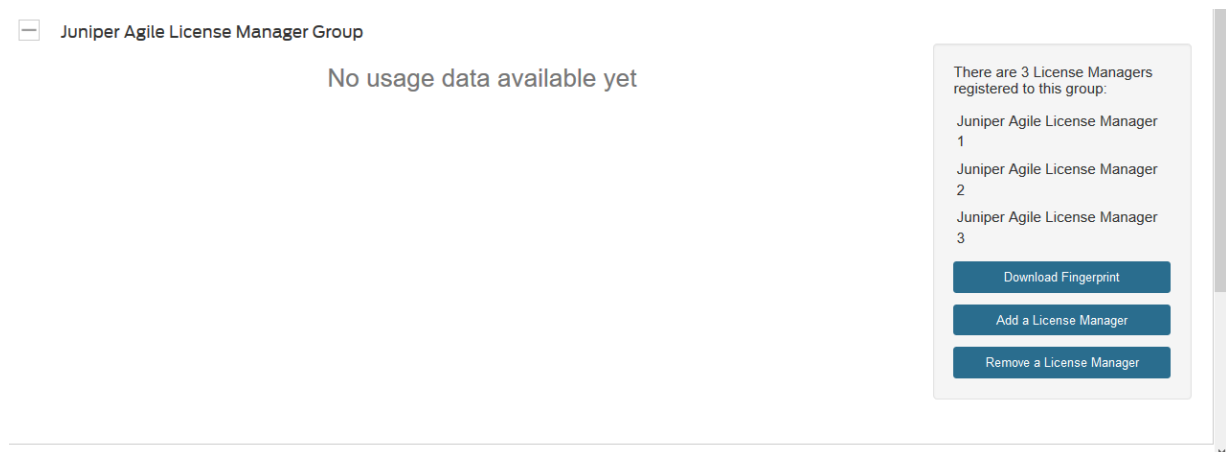
The fingerprint identity file is downloaded to your system and is ready to upload in the Juniper Agile License Manager.

Installing the Juniper Agile License Manager

Juniper Networks provides high-performance network devices that create a responsive and trusted environment for accelerating the deployment of services and applications over a single network. Some software and hardware features require a license to activate the feature. Using the Juniper Agile License Manager you can install, manage, and monitor the licenses.

To install the Agile License Manager, perform the following steps:

1. Download the Agile License Manager from the Juniper Support Website. For more information, see "Downloading the Juniper Agile License Manager" on page 24.

2. Copy the downloaded file to the **/var/tmp** location in the Agile License Manager system using the **scp agile-license-server-linux-x86-64-x.y.z.tgz root@192.0.2.0:/var/tmp** command.

   Provide the password when prompted.

```
[test.test]   scp agile-license-manager-linux-x86-x.y.z.tgz
root@198.51.100.0:/var/tmp
root@198.51.100.0's password:

agile-license-manager-linux-x86-x.y.z.tgz
                                        100%   13MB  13.3MB/s
00:01
```

3. Verify that the Agile License Manager package is copied to the **/var/tmp** location in the Agile License Manager system using the **cd /var/tmp ls** command.

```
root@test:/var/tmp# ls
agile-license-manager-linux-x86-x.y.z.tgz
systemd-private-aa7ed19468e34b75a043b73e92c0f841-systemd-timesyncd.service-XkL9ZN
systemd-private-a5b889e4d9e7491e9301c555462df462-colord.service-j95cAX
systemd-private-f497c488fb174398aaaba6603e0a6e26-colord.service-YeKITE
systemd-private-a5b889e4d9e7491e9301c555462df462-rtkit-daemon.service-Txbfuk
systemd-private-f497c488fb174398aaaba6603e0a6e26-rtkit-daemon.service-ngne8Y
systemd-private-aa7ed19468e34b75a043b73e92c0f841-colord.service-adVtpA
systemd-private-f497c488fb174398aaaba6603e0a6e26-systemd-timesyncd.service-59aZGa
systemd-private-aa7ed19468e34b75a043b73e92c0f841-rtkit-daemon.service-CxhZVO
```

4. Extract the copied file using the **# tar -xvzf agile-license-manager-linux-x86-x.y.z.tgz** command.

```
/var/tmp # tar -xvzf agile-license-manager-linux-x86-x.y.z.tgz
x agile-license-manager-linux-x86-x.y.z/
x agile-license-manager-linux-x86-x.y.z/docs/
x agile-license-manager-linux-x86-x.y.z/docs/todo
x agile-license-manager-linux-x86-x.y.z/uninstall64.sh
x agile-license-manager-linux-x86-x.y.z/install64.sh
x agile-license-manager-linux-x86-x.y.z/lserv_advance_config.xml
x agile-license-manager-linux-x86-x.y.z/copyrights/
x agile-license-manager-linux-x86-x.y.z/copyrights/copyrights_
```

```
x agile-license-manager-linux-x86-x.y.z/linux/
x agile-license-manager-linux-x86-x.y.z/linux/lserv64_junipernetworks
x agile-license-manager-linux-x86-x.y.z/linux/lserv64_junipernetworks.rc
x agile-license-manager-linux-x86-x.y.z/linux/start64.sh
x agile-license-manager-linux-x86-x.y.z/linux/sntlcloudps64_junipernetworks.rc
x agile-license-manager-linux-x86-x.y.z/linux/install_util64
x agile-license-manager-linux-x86-x.y.z/linux/sntlcloudps64_junipernetworks
x agile-license-manager-linux-x86-x.y.z/linux/LicenseAgreement
x agile-license-manager-linux-x86-x.y.z/linux/cacert.pem
x agile-license-manager-linux-x86-x.y.z/linux/stop64.sh
x agile-license-manager-linux-x86-x.y.z/linux/tools/
x agile-license-manager-linux-x86-x.y.z/linux/tools/lswhere64
x agile-license-manager-linux-x86-x.y.z/linux/tools/rlftool64
x agile-license-manager-linux-x86-x.y.z/linux/tools/lsmon64
x agile-license-manager-linux-x86-x.y.z/linux/tools/README
x agile-license-manager-linux-x86-x.y.z/README
```

5. Run the **install64.sh [[--accept-agreement]` [--simple 198.51.100.0] [--server-id-file lserv_server_identity_junipernetworks.xml] [--install-path /opt/license]] [--force] [--host-name JAL-LS]]** command to accept the license agreement and install the Juniper Agile License Manager.

```
  --acccept-agreement   :  To accept the license agreement implicitly without
reading the content if it is already read and accepted.
  --simple [-S]         :  The installation type will be simple, without any
redundancy support, provide local server IP for Agile License Manager to use.
  --advance [-A]        :  The installation type will be advance (default) with
 redundant server support, then server configuration file is mandatory to be
provided.
  --server-id-file [-I] :  The server identity file downloaded from JAL portal.

  --install-path [-P]   :  The folder path where the server installation have
to be copied, preferably can be /opt/license.
  --force               :  Force installation, example: deleting existing
installation content.
  --host-name [-H]      :  The Host friendly name to be used for local server,
 the name have to same name used in the EMS Server Group configuration in JAL
portal.
  --help                :  Usage help.
```

- Installation (without redundancy)

  # sudo ./install64.sh --accept-agreement -S 192.0.2.0 -I lserv_server_identity_junipernetworks.xml -P /opt/license --force -H agile-license-server-01

- Installation (with redundancy)

  # sudo ./install64.sh --accept-agreement -A lserv_advance_config.xml -I lserv_server_identity_junipernetworks.xml -P /opt/license --force -H agile-license-server-01

Note: After you accept the license agreement, the usage data from Agile License Manager is sent to Juniper EMS server.

The following details are sent from Agile License Manager is sent to Juniper EMS server.

- **Usage Generation Date (in UTC):** Time stamp when the usage data was sent from Agile License Manager to Juniper EMS server.

- **Usage Collection Date (in UTC):** Time stamp when the usage data was collected at the device.

- **Transaction Type:** Session login, session logout, and session refresh.

- **Entitlement ID:** The entitlement to which the licensed feature belongs.

- **Product Key:** 1:1 association with the entitlement ID to identify the entitlement that was purchased from Juniper Networks.

- **Customer Identifier:** Your Juniper Networks ID.

- **Product:** The product SKU to which the licensed feature belongs.

- **Feature:** The consumed feature ID.

- **User:** The device username which consumes the licensed feature (typically the Junos root user)

- **Consumed User Limit:** Quantity of the licensed feature requested from the Agile License Manager.

- **Consumed Usage Count:** Quantity of the licensed feature actually consumed by the device.

- **Session ID:** Internal identifier of the current license lease session.

- **Product Model:** Juniper Networks product model name. For example - vMX, PTX10003, or MX480.

- **Chassis Serial Number:** Device or application serial number.

- **License IDs:** License identifier.

- **Software Serial Number:** Juniper business-system assigned license serial number.

6. Navigate to **/opt/license/AgileLicenseManager/x.y.z** and run the **sudo ./start.sh** command to start the Agile License Manager. Run the **sudo ./stop.sh** command to stop the Agile License Manager.

   - Start the Agile License Manager using the **# /opt/license/AgileLicenseManager/x.y.z> sudo ./start.sh** command.

```
Starting Agile License Manager...
Initializing Agile License Manager for junipernetworks.
12/28/18 10:42:30 Please wait, sleeping for 30 sec to allow redundant servers
 to synchronize...
```

```
12/28/18 10:43:00 Server redundancy synch in progress.. (82) Status : UNKNOWN
12/28/18 10:43:00 Please wait, sleeping for 30 sec to allow redundant servers
 to synchronize...
12/28/18 10:43:30 Server redundancy synch complete (2), Status : LEADER
Agile License Manager for junipernetworks is running.

Starting Agile Cloud Plugin Service...
Initializing Agile Cloud Plugin Service for junipernetworks.
Agile Cloud Plugin Service for junipernetworks is running.
```

- Stop the Agile License Manager using the **# /opt/license/AgileLicenseManager/x.y.z> sudo ./stop.sh** command.

```
Trying to stop Agile License Manager if its running!
Stopping Agile License Manager for junipernetworks.
Successfully stopped Agile License Manager for junipernetworks.
Trying to stop Agile Cloud Plugin Service if its already running!
Stopping Agile Cloud Plugin Service for junipernetworks.
Successfully stopped Agile Cloud Plugin Service for junipernetworks.
```

7. Optionally, check the status of the Agile License Manager by using the **sudo ./lswhere64** command. For more information, see .

Uninstalling the Juniper Agile License Manager

IN THIS SECTION

- Uninstall the Juniper Agile License Manager | 30

Uninstall the Juniper Agile License Manager

To uninstall the Juniper Agile License Manager, run the **uninstall64.sh.**command

NOTE: When you uninstall the Agile License Manager, licensed features running on the configured devices might stop working.

3

CHAPTER

Managing Juniper Agile License Manager

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Managing the Juniper Agile License Manager

Activating and Deploying Software Entitlements to the Juniper Agile License Manager

After you have downloaded and configured the Juniper Agile License Manager application and installed the fingerprint file on the Agile License Manager, you can activate and deploy your software entitlements to your Agile License Manager.

To activate and deploy your software entitlements to your Juniper Agile License Manager, perform the following steps:

1. Log in to the Juniper Agile Licensing Portal.

2. Navigate to the **My Entitlements** section on the landing page.

3. Click the **Activate** button next to the entitlement that you want to deploy to your Agile License Manager.

   NOTE: The full quantity of the entitlement must be available to activate an entitlement to an Agile License Manager (that is, when the Used column shows 0, the full quantity is available for you to deploy).

4. In the Product Activation screen, select the Software Version and the quantity to activate, and choose the License Manager Group to which you want to deploy this license. You can add any useful information in the Notes field. Click **Activate**.

When the activation is complete, the following screen is displayed:

5. Click **Activate**. Once complete, the screen will display as shown below:

Viewing the Juniper Agile License Manager Status

You can check the status of the Juniper Agile License Manager by using the lswhere tool.

The command **lswhere64** displays the version and the configured IP addresses of the Agile License Manager.

```
contrail-ubm-test:/opt/license/AgileLicenseServer/1.0.0.2/tools> sudo ./lswhere64


   Sentinel RMS Development Kit 9.3.0.0041 Search Tool For License Servers
   Copyright (C) 2018 SafeNet, Inc.


    Server Address      : 192.0.2.0

    Server Address      : 192.0.2.1
```

Viewing Feature and License Information in Juniper Agile License Manager

You can view feature information license type, and license information in Agile License Manager by using the lsmon tool. The output of the **sudo ./lsmon64 localhost** shows the following information:

```
contrail-ubm-test:/opt/license/AgileLicenseServer/192.0.2.0/tools> sudo ./lsmon64
 localhost
[sudo] password for test:
  Sentinel RMS Development Kit 9.3.0.0041 Application Monitor
  Copyright (C) 2018 SafeNet, Inc.

[Contacting Sentinel RMS Development Kit server on host "localhost"]


|- Feature Information
   |- Feature name                 : "166"
   |- Feature version              : ""

   |- License type                 : "Normal License"
   |- Commuter license allowed     : NO
   |- Maximum concurrent user(s)   : 1000
   |- Unreserved tokens in use     : 0
   |- Reserved tokens in use       : 0
   |- Available reserved           : 0
   |- Soft limit on users          : Unlimited
   |- License start date           : Mon Nov 26 14:48:00 2018
   |- Expiration date              : Sun Feb 24 15:03:00 2019
```

```
   |- Check time tamper              : No
   |- Application-server locking     : Server-locked license.
   |- Server #1 locking code         : Primary   = 400-*$ABC123
   |- Additive/exclusive/aggregate   : Aggregate license(Additive without
restrictions).
   |- Token lifetime (heartbeat)     : 900 secs (15 min(s))
   |- Allowed on VM                  : YES


   |- License Information
     |- License Hash                 : $ABC123
     |- License type                 : "Normal License"
     |- License storage name         :
/opt/license/AgileLicenseServer/192.0.2.0/lservrc
     |- License status               : Active
     |- Commuter license allowed      : NO
     |- Maximum concurrent user(s)    : 1000
     |- Soft limit on users           : Unlimited
     |- License start date            : Mon Nov 26 14:48:00 2018
     |- Expiration date               : Sun Feb 24 15:03:00 2019
     |- Check time tamper             : No
     |- Application-server locking    : Server-locked license.
     |- Server #1 locking code        : Primary   = 400-*$ABC123
     |- Additive/exclusive/aggregate  : Aggregate license(Additive without
restrictions).
     |- Token lifetime (heartbeat)    : 900 secs (15 min(s))
     |- Allowed on VM                 : YES


|- Feature Information
   |- Feature name                    : "221"
   |- Feature version                 : ""

   |- License type                    : "Normal License"
   |- Commuter license allowed        : NO
   |- Maximum concurrent user(s)      : 10
   |- Unreserved tokens in use        : 0
   |- Reserved tokens in use          : 0
   |- Available reserved              : 0
   |- Soft limit on users             : Unlimited
   |- License start date              : Mon Nov 26 14:48:00 2018
   |- Expiration date                 : Sun Feb 24 15:03:00 2019
   |- Check time tamper               : No
   |- Application-server locking      : Server-locked license.
   |- Server #1 locking code          : Primary   = 400-*$ABC123
   |- Additive/exclusive/aggregate    : Aggregate license(Additive without
```

```
restrictions).
    |- Token lifetime (heartbeat)     : 900 secs (15 min(s))
    |- Allowed on VM                  : YES


    |- License Information
      |- License Hash                 : $ABC123
      |- License type                 : "Normal License"
      |- License storage name         :
/opt/license/AgileLicenseServer/192.0.2.0/lservrc
      |- License status               : Active
      |- Commuter license allowed     : NO
      |- Maximum concurrent user(s)   : 10
      |- Soft limit on users          : Unlimited
      |- License start date           : Mon Nov 26 14:48:00 2018
      |- Expiration date              : Sun Feb 24 15:03:00 2019
      |- Check time tamper            : No
      |- Application-server locking    : Server-locked license.
      |- Server #1 locking code       : Primary   = 400-*$ABC123
      |- Additive/exclusive/aggregate  : Aggregate license(Additive without
restrictions).
      |- Token lifetime (heartbeat)   : 900 secs (15 min(s))
      |- Allowed on VM                : YES
```

Juniper Agile License Manager Redundancy Group Overview

Juniper Agile License Manager Redundancy Group provides high availability of the Juniper Agile License Manager. Two or more Agile License Managers operate as a single Agile License Manager for uninterrupted licensing operations.

Figure 7: Juniper Agile License Manager Redundancy Group

Non-redundant License Manager   Redundant License Manager
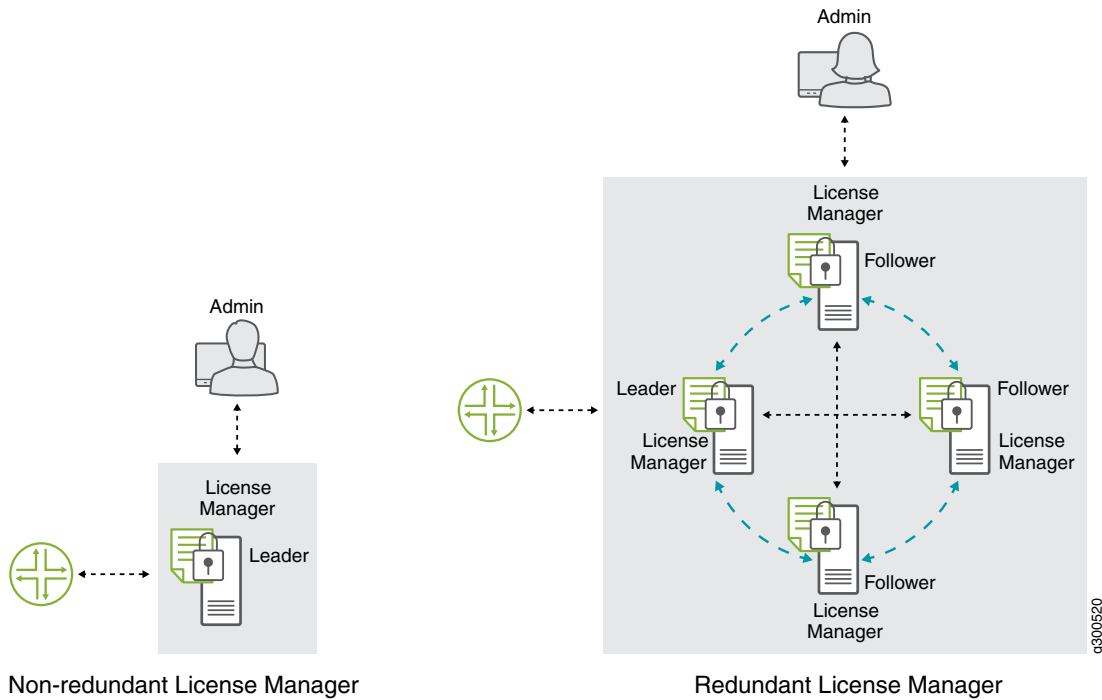
In a redundancy group, configuration files and dynamic runtime session states are synchronized between the Agile License Mangers. Therefore, all the Agile License Managers in the group operate like a single Agile License Manager, providing device, interface, and service-level redundancy.

The redundancy mode is disabled if only one Agile License Manager is configured. The redundancy mode is enabled if more than one Agile License Manager is configured.

We recommend that you set up a Agile License Manager Redundancy Group with redundant (more than one) license managers.

Benefits of a License Manager Redundancy Group

- Provides high availability between devices when connecting branch and remote site links to larger corporate offices. By leveraging the redundancy group, enterprises can ensure connectivity in the event of device or link failure.

Adding Juniper Agile License Managers to a Redundancy Group

Adding a new Juniper Agile License Manager to a redundancy group provides high availability. This includes synchronization of configuration files, licenses, and the dynamic runtime session states between the Agile License Managers.

To add a new Juniper Agile License Manager to the redundancy group, perform the following steps:

1. Log in to Juniper Agile Licensing Portal.

2. Click **License Managers**. The **License Manager Groups** names are displayed, navigate to License Manager group for which you want to add a new Agile License Manager.

3. Click **Add a Server**.

Figure 8: Juniper Agile License Manager Group
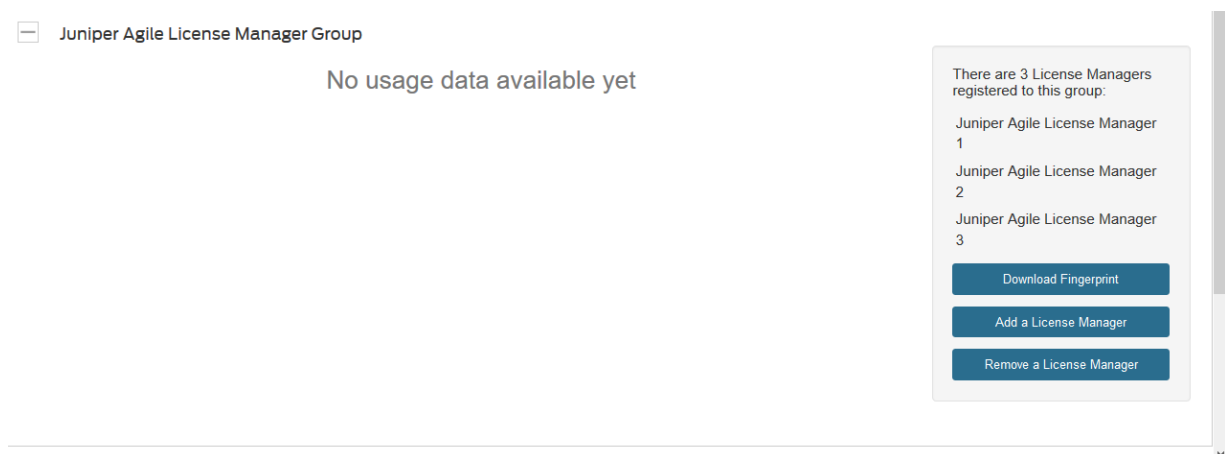
4. Enter the Agile License Manager name in the **Server Name** fields.

Figure 9: Add License Manager to Juniper Agile License Manager Group

5. Click **Save Changes**. The new Agile License Manager is now listed on the License Manager Groups page.

Figure 10: Juniper Agile License Manager Group

Deleting Existing Juniper Agile License Managers from a Redundancy Group

Deleting a Juniper Agile License Manager from a redundancy group disables high availability. The deletion also, impacts the synchronization of configuration files, licenses, and the dynamic runtime session states between the Agile License Managers.

To delete an existing Juniper Agile License Manager from a redundancy group:

1. Log in to Juniper Agile Licensing Portal.

2. Click **License Managers**. The **License Manager Groups** names are displayed, navigate to License Manager group for which you want to delete the Agile License Manager.

3. Click **Remove a Server**.

Figure 11: Juniper Agile License Manager Group
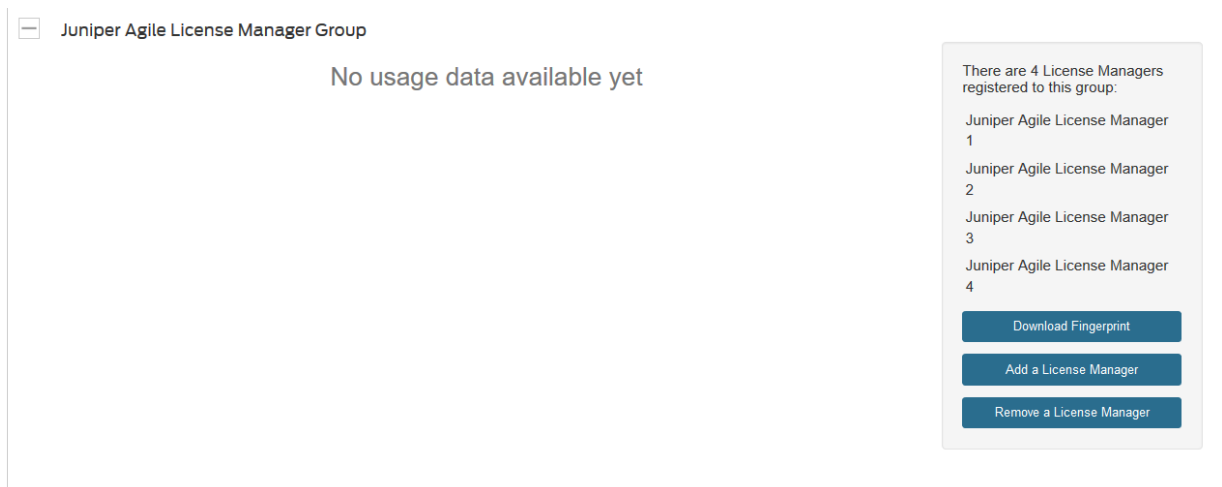
4. Select the Agile License Manager name from the list displayed.

Remove Server From "Juniper Agile License Manager Group" ✖

Select the servers to be removed

☐ Juniper Agile License Manager 1

☐ Juniper Agile License Manager 2

☑ Juniper Agile License Manager 3

☑ Juniper Agile License Manager 4

Note: At least 1 server must be assigned to this group.

Cancel   **Save Changes**

5. Click **Save Changes** to delete the selected Agile License Manager from the redundancy group.

⊟ Juniper Agile License Manager Group

No usage data available yet

There are 2 License Managers registered to this group:

Juniper Agile License Manager 1

Juniper Agile License Manager 2

Download Fingerprint

Add a License Manager

Remove a License Manager

Moving a Software Entitlement from One License Manager to a Different License Manager

You can move the license entitlements from once License Manager to a different License Manager whenever required.

- To move the software entitlements from one License Manager to other, follow the steps:

- Log in to Juniper Agile Licensing Portal.

- Navigate to **My Activations** page.

- Locate the activation that you want to move from one License Manager to a different License Manager.

- Click **Revoke**, on the right side of the activation.

- Once the activation has been revoked, the license will automatically be removed from the License Manager.

- The revoked quantity will now be returned to the entitlement and visible within the **My Entitlements** section on Agile Licensing portal home page.

- The entitlement can be activated against a different License Manager using the activation workflow.

- To move software entitlements to another License Manager Group, use the steps in the "Activating and Deploying Software Entitlements to the Juniper Agile License Manager" on page 33.

4

CHAPTER

Configuring Licenses

Configuring Licenses in Junos OS using Network Licensing Mode

Manage Licenses Using Network License Mode

In network mode, the device automatically requests a license from the Juniper Agile License Manager that is installed on the network.

1. Enable network mode for Juniper Agile Licensing.

   # set system license network-mode

2. Configure the Juniper Agile License Manager IP address to retrieve the required licenses.

   # set system license network-server address *server-name or server-ip*

In network mode, the device fetches the licenses from Juniper Agile License Manager.

Configuring Licenses on vMX Virtual Routers

Configure the licenses that are available in Juniper Agile License Manager on a vMX device.

1. Log in to the vMX device and enter configuration mode.

2. Set the **chassis license** along with the type of license required.

```
# set chassis license scale ?
Possible completions:
  advance                  Advance license
  base                        Base license
  premium              Premium license
```

3. Set the **chassis license bandwidth** in Mbps.

```
# set chassis license bandwidth ?
Possible completions:
  <bandwidth>             Configure bandwidth of FPC in Mbps
```

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
```

Managing cRPD Licenses

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

There are two methods to add license on containerized routing protocol process (cRPD).

Adding a License to cRPD

Method 1:

To add a license key to the cRPD:

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

   user@crpd> **request system license add** *filename*

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

   ```
   user@crpd> request system license add terminal
   XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX
   ```

2. Verify the installed license.

   user@crpd> **show system license**

   ```
   show system license
   License usage:
                                    Licenses    Licenses    Licenses    Expiry
     Feature name                      used     installed     needed
     containerized-rpd-standard          1          1            0    2020-06-05
    23:59:00 UTC
   Licenses installed:
     License identifier: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX
     License SKU: CRPD-STD
   ```

```
   License version: 1
   Order Type: commercial
   Customer ID: |**CustomerId**|
   Features:
     containerized-rpd-standard - Containerized routing protocol daemon with
standard features
       date-based, 2019-06-06 00:00:00 UTC - 2020-06-05 23:59:00 UTC
```

Method 2:

To add a license key to the cRPD:

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

```
   user@crpd# set system license keys key "XXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
       XXXXXXXXXX XXXXXXXXXX ........XXXXXXXXXX XXXXXXXXXX"
```

2. Verify the installed license.

`user@crpd>` **show system license**

```
 show system license
 License usage:
                                  Licenses    Licenses    Licenses    Expiry
   Feature name                     used      installed    needed
   containerized-rpd-standard         0           1           0     2020-06-05
 23:59:00 UTC
 Licenses installed:
   License identifier: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX
   License SKU: CRPD-STD
   License version: 1
   Order Type: commercial
   Customer ID: |**CustomerId**|
   Features:
     containerized-rpd-standard - Containerized routing protocol daemon with
standard features
       date-based, 2019-06-06 00:00:00 UTC - 2020-06-05 23:59:00 UTC
```

Managing cSRX Licenses

There are two methods to add license on cSRX.

Add license using a license file

To add a license file to the cSRX:

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

   user@csrx> **request system license add** *filename*

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

   ```
   user@csrx> request system license add terminal
   XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
              XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
              XXXXXXXXX XXXXXXXXX
   ```

2. Verify the installed license.

   user@csrx> **show system license**

   ```
   show system license
   License usage:
                                   Licenses     Licenses     Licenses      Expiry
      Feature name                     used    installed      needed
      anti_spam_key_sbl                   0            1            0     2024-12-04
   23:59:00 UTC
      idp-sig                             0            1            0     2024-12-04
   23:59:00 UTC
      appid-sig                           0            1            0     2024-12-04
   23:59:00 UTC
      av_key_sophos_engine                0            1            0     2024-12-04
   ```

```
   23:59:00 UTC
    wf_key_websense_ewf                        0            1         0    2024-12-04
   23:59:00 UTC
    cSRX                                        1            1         0    2024-12-04
   23:59:00 UTC

 Licenses installed:
   License identifier: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX
   License SKU: S-CSRX-A2-5
   License version: 1
   Order Type: commercial
   Customer ID: |**CustomerId**|
   License count: 1
   Features:
     idp-sig         - IDP Signature
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
     av_key_sophos_engine - Anti Virus with Sophos Engine
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
     appid-sig       - APPID Signature
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
     cSRX            - Containerized Firewall
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
     anti_spam_key_sbl - Anti-Spam
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
     wf_key_websense_ewf - Web Filtering EWF
       date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
```

Add license using a license key

To add a license key to the cSRX:

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

   ```
   user@csrx# set system license keys key "XXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
   XXXXXXXXXX XXXXXXXXXX ........XXXXXXXXXX XXXXXXXXXX"
   ```

2. Verify the installed license.

   `user@csrx>` **show system license**

   ```
   show system license
   License usage:
   ```

```
                                Licenses     Licenses     Licenses      Expiry
  Feature name                     used      installed     needed
  anti_spam_key_sbl                 0            1            0       2024-12-04
23:59:00 UTC
  idp-sig                           0            1            0       2024-12-04
23:59:00 UTC
  appid-sig                         0            1            0       2024-12-04
23:59:00 UTC
  av_key_sophos_engine              0            1            0       2024-12-04
23:59:00 UTC
  wf_key_websense_ewf               0            1            0       2024-12-04
23:59:00 UTC
  cSRX                              1            1            0       2024-12-04
23:59:00 UTC


Licenses installed:
  License identifier: XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX
  License SKU: S-CSRX-A2-5
  License version: 1
  Order Type: commercial
  Customer ID: |**CustomerId**|
  License count: 1
  Features:
    idp-sig         - IDP Signature
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
    av_key_sophos_engine - Anti Virus with Sophos Engine
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
    appid-sig       - APPID Signature
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
    cSRX            - Containerized Firewall
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
    anti_spam_key_sbl - Anti-Spam
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
    wf_key_websense_ewf - Web Filtering EWF
      date-based, 2019-12-06 00:00:00 UTC - 2024-12-04 23:59:00 UTC
```

Managing vSRX Licenses Using Standalone Mode

IN THIS SECTION

There are two methods to add licenses on vSRX.

Add License Using a License File

To add a license file to vSRX:

1. Copy the license activation key file to the Virtual Chassis Port (VCP) and add the license key by specifying the filename.

   user@vSRX> **request system license add** *filename*

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

   ```
   user@vSRX> request system license add terminal
   XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX
   ```

2. Verify the installed license.

   user@vSRX> **show system license**

   ```
   License usage:
                                 Licenses     Licenses     Licenses     Expiry
     Feature name                    used    installed      needed
     anti_spam_key_sbl                  0            1           0     30 days
     idp-sig                            0            1           0     30 days
     appid-sig                          0            1           0     30 days
     av_key_sophos_engine               0            1           0     30 days
     logical-system                     1            3           0     permanent

     wf_key_websense_ewf                0            1           0     30 days
   ```

```
   Virtual Appliance                              1             1           0    59 days
   remote-access-ipsec-vpn-client         0             2           0    permanent


 Licenses installed:
   License identifier: XXXX-XXXX-XXXXX-XXXX
   License version: 4
   Software Serial Number: $ABC123
   Customer ID: |**CustomerId**|
   Features:
     idp-sig          - IDP Signature
       count-down, Original validity: 30 days
     wf_key_websense_ewf - Web Filtering EWF
       count-down, Original validity: 30 days
     anti_spam_key_sbl - Anti-Spam
       count-down, Original validity: 30 days
     appid-sig         - APPID Signature
       count-down, Original validity: 30 days
     av_key_sophos_engine - Anti Virus with Sophos Engine
       count-down, Original validity: 30 days

   License identifier: XXXX-XXXX-XXXXX-XXXX
   License version: 4
   Software Serial Number: $ABC123
   Customer ID: |**CustomerId**|
   Features:
     Virtual Appliance - Virtual Appliance
       count-down, Original validity: 60 days
```

Add License Using a License Key

To add a license key to vSRX:

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

   user@vSRX# set system license keys key "XXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX
       XXXXXXXXXX XXXXXXXXXX ....XXXXXXXXXX XXXXXXXXXX"

2. Verify the installed license.

   user@vSRX> **show system license**

```
License usage:
                           Licenses    Licenses    Licenses     Expiry
  Feature name                 used    installed   needed
  anti_spam_key_sbl               0           1        0      30 days
  idp-sig                         0           1        0      30 days
  appid-sig                       0           1        0      30 days
  av_key_sophos_engine            0           1        0      30 days
  logical-system                  1           3        0      permanent

  wf_key_websense_ewf             0           1        0      30 days
  Virtual Appliance               1           1        0      59 days
  remote-access-ipsec-vpn-client  0           2        0      permanent

Licenses installed:
  License identifier: XXXX-XXXX-XXXXX-XXXX
  License version: 4
  Software Serial Number: $ABC123
  Customer ID: |**CustomerId**|
  Features:
    idp-sig          - IDP Signature
      count-down, Original validity: 30 days
    wf_key_websense_ewf - Web Filtering EWF
      count-down, Original validity: 30 days
    anti_spam_key_sbl - Anti-Spam
      count-down, Original validity: 30 days
    appid-sig        - APPID Signature
      count-down, Original validity: 30 days
    av_key_sophos_engine - Anti Virus with Sophos Engine
      count-down, Original validity: 30 days

  License identifier: XXXX-XXXX-XXXXX-XXXX
  License version: 4
  Software Serial Number: $ABC123
  Customer ID: |**CustomerId**|
  Features:
    Virtual Appliance - Virtual Appliance
      count-down, Original validity: 60 days
```

Managing QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C Devices License

You must add a license to use QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C devices features. The licensed features are enforced based on the license you purchased.

To manage a license on the QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C devices, use below methods:

- Using operational command on the device, see "Step-by-Step Procedure" on page 57.

- Using network mode, see "Manage Licenses Using Network License Mode" on page 45

You cannot install license on the device, when the device using network mode.

There are two methods to add license on QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C devices.

Add license using a license file:

To add a license key to the QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C devices:

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

   user@qfx> **request system license add** *filename*

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

   ```
   user@qfx> request system license add terminal
   XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXXXX
             XXXXXXXXX XXXXXXXXX
   ```

2. Verify the installed license.

   user@qfx> **show system license**

   ```
   show system license
   License usage:
                                   Licenses     Licenses     Licenses     Expiry
     Feature name                      used    installed       needed
     esi-lag                              0            1            0     permanent

     l3static                             1            0            1     invalid
   ```

```
Licenses installed:
  License identifier: XXXXXXXX-XXXX-XXXX-XXXXX-XXXXXXXXXXXX
  License SKU: DEV-SKU-jnpr
  License version: 1
  Order Type: commercial
  Software Serial Number: xxxxxxxx-xxxx
  Customer ID: JUNIPER NETWORKS
  License count: 1
  Features:
    esi-lag          - ESI-LAG
      permanent
```

Add license using a license key:

To add a license key to the QFX5220-32CD, QFX5220-128C, PTX10003-80C, and PTX10003-160C devices:

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

   user@qfx# set system license keys key "XXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX ....XXXXXXXXXX XXXXXXXXXX"

2. Verify the installed license.

   `user@qfx>` **show system license**

```
show system license
License usage:
                                   Licenses     Licenses    Licenses     Expiry
  Feature name                         used    installed      needed
  esi-lag                                 0            1           0    permanent

  l3static                                1            0           1     invalid

Licenses installed:
  License identifier: XXXXXXXX-XXXX-XXXX-XXXXX-XXXXXXXXXXXX
  License SKU: DEV-SKU-jnpr
  License version: 1
  Order Type: commercial
  Software Serial Number: xxxxxxxx-xxxx
  Customer ID: JUNIPER NETWORKS
  License count: 1
```

```
Features:
  esi-lag         - ESI-LAG
    permanent
```

For more information on install, save, and delete the license, see Managing Licenses.

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.

5

CHAPTER

Troubleshooting Juniper Agile License Manager

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Troubleshooting the Juniper Agile License Manager

Troubleshooting the Juniper Agile License Manager

This topic provides a general guide to troubleshooting some typical problems you might encounter.

Installation Fails for Non-Root Users

Problem

When a non-root user tries to install the Agile License Manager by invoking the following **install** script, an error message is displayed during the installation process.

$ ./install64.sh -S 10.221.133.158 -I ../LicenseManagerIdentity.xml --accept-agreement --force -P /opt/license -H agile-license-server-03

```
./install64.sh must be run as root
```

Solution

On Ubuntu devices use the **sudo** prefix to provide root access to the installation or log in as root user.

$ sudo ./install64.sh -S 10.221.133.158 -I ../LicenseManagerIdentity.xml --accept-agreement --force -P /opt/license -H nari-agile-license-server-03

```
Operating System: Linux
Host Name: nari-agile-license-server-03
Installation type: SIMPLE
Customer ID: e58400d1-f33f-11e8-acbb-066d655a3c76
License Manager ID file: ../LicenseManagerIdentity.xml
Installation Path: /opt/license/AgileLicenseManager/0.0.1


Installing Agile License Manager 0.0.1 in directory
/opt/license/AgileLicenseManager/0.0.1.
Copying Agile License Manager 0.0.1 files to /opt/license/AgileLicenseManager/0.0.1.
Agile License Manager installed successfully.
```

Invalid or Corrupt Agile License Manager ID File

Problem

When you try to install the Agile License Manager by invoking the following **install** script, an error is displayed during the installation process.

$ sudo ./install64.sh -S 10.221.133.158 -I ../LicenseManagerIdentity.xml --accept-agreement --force -P /opt/license -H nari-agile-license-server-03

```
Invalid license manager ID file.
```

Solution

The issues occurs because of a corrupted or edited **LicenseManagerIdentity.xml** file is downloaded from the Agile Licensing Portal. The user must not edit the file. If the file is corrupted, download the file again from the portal and perform the installation.

Error Checking Status of Agile License Manager

Problem

The message **Error checking...133** is seen when the .Agile License Server is started.

```
# sudo ./start64.sh
sudo: unable to resolve host blrserver01
```

```
# Do not remove the following line, or various programs

Trying to stop Agile License Manager if its already running!
Stopping Agile License Manager for junipernetworks.
Agile License Manager for junipernetworks is already stopped.
Trying to stop Agile Cloud Plugin Service if its already running!
Stopping Agile Cloud Plugin Service for junipernetworks.
Agile Cloud Plugin Service for junipernetworks is already stopped.

Starting Agile License Manager...
Initializing Agile License Manager for junipernetworks.
03/04/19 12:35:55 Please wait, sleeping for 30 sec to allow redundant License
Managers to synchronize.
03/04/19 12:36:25 Error checking status of License Manager : 133
03/04/19 12:36:25 Continuing further, for starting SCP
Agile License Manager for junipernetworks is running.
```

Solution

Issue is due to the servers configured in server group are not able resolve, either it could be local server name or other servername in the group.
Say there are blrserver01, blrserver02, blrserver03 servers in server group and only blrserver01 is being used and others are dummy server then you need to add the entries in /etc/hosts file as below. The entries are required to ensure all the hostnames are able to resolve.

```
10.221.129.23  blrserver01
10.1.1.2  blrserver02
10.1.1.3  blrserver03
```

Agile License Manager Starts as Follower Instead of Leader

When you start an Agile License Manager that is the LEADER (per the preference order it should start as the LEADER) by using the **#sudo ./start64.sh** command, it starts as FOLLOWER. The following output is displayed:

```
Trying to stop Agile License Manager if its already running!
Stopping Agile License Manager for junipernetworks.
Successfully stopped Agile License Manager for junipernetworks.
Trying to stop Agile Cloud Plugin Service if its already running!
Stopping Agile Cloud Plugin Service for junipernetworks.
```

```
Please wait....
Successfully stopped Agile Cloud Plugin Service for junipernetworks.

Starting Agile License Manager...
Initializing Agile License Manager for junipernetworks.
03/04/19 12:58:22 Please wait, sleeping for 30 sec to allow redundant License
Managers to synchronize.
03/04/19 12:58:52 License Manager redundancy synch in progress.. (82) Status :
UNKNOWN
03/04/19 12:58:52 Please wait, sleeping for 30 sec to allow redundant License
Managers to synchronize.
03/04/19 12:59:22 License Manager redundancy synch complete (2), Status : FOLLOWER
Agile License Manager for junipernetworks is running.

Starting Agile Cloud Plugin Service...
Initializing Agile Cloud Plugin Service for junipernetworks.
Agile Cloud Plugin Service for junipernetworks is running.
```

Solution

When server is started, there will be LEADER/FOLLOWER election among the servers configured in the lserv_advance_config.xml file used in the installation with -A option to denote multiple servers in the redundancy setup.

```xml
  <licenseServerRedundancy>
    <!-- Server details consisting name and IP are configured in the order sequence
 of preference
        Maximum allowed servers are 4 in a redundat server group, the minimum is
2. -->
    <licenseServer>
      <serverName>agile-license-server-01</serverName>
      <serverIP>10.1.1.1</serverIP>
    </licenseServer>

    <licenseServer>
      <serverName>agile-license-server-02</serverName>
      <serverIP>10.1.1.2</serverIP>
    </licenseServer>
    <licenseServer>
      <serverName>agile-license-server-03</serverName>
      <serverIP>10.1.1.3</serverIP>
    </licenseServer>
```

```
   <licenseServer>
     <serverName>agile-license-server-04</serverName>
     <serverIP>10.1.1.4</serverIP>
   </licenseServer>


 </licenseServerRedundancy>
```

During the RMS server LEADER election, the order of preference is as per the order of the servers listed in the previous output, and whichever server is up and is running with the License Manager setup will take the LEADER role. For example, if agile-license-server-01 is down, then agile-license-server-02 will take the LEADER role. When agile-license-server-01 is back online, it will take back the LEADER role.

However, during initialization, the Agile License Manager status shown might be transient and might change after a few seconds depending on the availability of the other Agile License Managers in the group.

You can verify the Agile License Manager status by running the following command at any time when the Agile License Manager is running.

 # sudo ./lsmon64 -d -l localhost

```
 Pool Info:
<?xml version="1.0" encoding="UTF-8" standalone="no"?>


<sentinelInfo>
  <serverPool>
    <server>
      <type>LEADER</type>
      <status>UP</status>
      <hostName></hostName>
      <ipAddress>10.221.129.23</ipAddress>
    </server>
    <server>
      <type>FOLLOWER</type>
      <status>DOWN</status>
      <hostName></hostName>
      <ipAddress>10.1.1.2</ipAddress>
    </server>
    <server>
      <type>FOLLOWER</type>
      <status>DOWN</status>
      <hostName></hostName>
      <ipAddress>10.1.1.3</ipAddress>
    </server>
```

```
    </serverPool>
</sentinelInfo>
```