



SRC Software Licensing on C Series Controllers



Modified: 2016-05-24

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SRC Software Licensing on C Series Controllers

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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 <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

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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 <http://www.juniper.net/techpubs/>.

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 <http://www.juniper.net/books>.

Supported Platforms







For the features described in this document, the following platforms are supported:

- C Series

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.

Documentation Conventions

Table 1 on page x defines the notice icons used in this guide. Table 3 on page xi defines text conventions used throughout this documentation.

Table 2: 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 3: Text Conventions

Convention	Description	Examples
Bold text like this	<ul style="list-style-type: none"> Represents keywords, scripts, and tools in text. Represents a GUI element that the user selects, clicks, checks, or clears. 	<ul style="list-style-type: none"> Specify the keyword exp-msg. Run the install.sh script. Use the pkgadd tool. To cancel the configuration, click Cancel.
Bold text like this	Represents text that the user must type.	user@host# set cache-entry-age <i>cache-entry-age</i>
Fixed-width text like this	Represents information as displayed on your terminal's screen, such as CLI commands in output displays.	<pre>nic-locators { login { resolution { resolver-name /realms/ login/A1; key-type LoginName; value-type SaeId; } } }</pre>
Regular sans serif typeface	<ul style="list-style-type: none"> Represents configuration statements. Indicates SRC CLI commands and options in text. Represents examples in procedures. Represents URLs. 	<ul style="list-style-type: none"> system ldap server{ stand-alone; Use the request sae modify device failover command with the force option user@host# ... http://www.juniper.net/techpubs/software/management/sdx/api-index.html

Table 3: Text Conventions (*continued*)

<i>Italic sans serif typeface</i>	Represents variables in SRC CLI commands.	<code>user@host# set local-address local-address</code>
Angle brackets	In text descriptions, indicate optional keywords or variables.	Another runtime variable is <code><gfwif></code> .
Key name	Indicates the name of a key on the keyboard.	Press Enter.
Key names linked with a plus sign (+)	Indicates that you must press two or more keys simultaneously.	Press Ctrl + b.
<i>Italic typeface</i>	<ul style="list-style-type: none"> Emphasizes words. Identifies book names. Identifies distinguished names. Identifies files, directories, and paths in text but not in command examples. 	<ul style="list-style-type: none"> There are two levels of access: <i>user</i> and <i>privileged</i>. <i>SRC-PE Getting Started Guide</i>. <i>o=Users, o=UMC</i> The <i>/etc/default.properties</i> file.
Backslash	At the end of a line, indicates that the text wraps to the next line.	<code>Plugin.radiusAcct-1.class=\net.juniper.smgmt.sae.plugin\RADIUSTrackingPluginEvent</code>
Words separated by the symbol	Represent a choice to select one keyword or variable to the left or right of this symbol. (The keyword or variable may be either optional or required.)	<code>diagnostic line</code>

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/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 J-Care or Partner Support Service 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 <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://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: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

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

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- 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 <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Software Features Overview on page 3](#)
- [License Overview on page 7](#)
- [SRC License Server Overview on page 9](#)
- [License Reports on page 15](#)

CHAPTER 1

Software Features Overview

- [SRC Component Overview on page 3](#)

SRC Component Overview

The SRC software is a dynamic system. It contains many components that you use to build a subscriber management environment. You can use these tools to customize and extend the SRC software for your use and to integrate the SRC software with other systems. The SRC software also provides the operating system and management tools for C Series Controllers.

[Table 4 on page 3](#) gives a brief description of the components that make up the SRC software.

Table 4: Descriptions of SRC Components

Component	Description
Server Components	
Service activation engine (SAE)	<ul style="list-style-type: none">• Authorizes, activates, and deactivates subscriber and service sessions by interacting with systems such as Juniper Networks routers, cable modem termination system (CMTS) devices, RADIUS servers, and directories.• Collects accounting information about subscribers and services from routers, and stores the information in RADIUS accounting servers, flat files, and other accounting databases.• Provides plug-ins and application programming interfaces (APIs) for starting and stopping subscriber and service sessions and for integrating with systems that authorize subscriber actions and track resource usage.
Subscriber Information Collector (SIC)	The SIC listens for RADIUS accounting events from IP edge devices (accounting clients) and forwards them to a remote AAA server, allowing the SRC software to gain increased subscriber awareness. Additionally, the SIC can optionally edit accounting events before routing them.
Juniper Policy Server (JPS)	Acts as a policy decision point (PDP) and policy enforcement point (PEP) that manages the relationships between application managers and CMTS devices in a PCMM environment.
Network information collector (NIC)	Collects information about the state of the network and can provide a mapping from a given type of network data to another type of network data.
Redirect Server	Redirects HTTP requests received from IP Filter to a captive portal page.

Table 4: Descriptions of SRC Components (*continued*)

Component	Description
3GPP Gateway	The SRC Third-Generation Partnership Project (3GPP) gateway is a Diameter-based component in the SRC software, which provides integration with 3GPP Policy and Charging Control environments, to provide fixed-mobile convergence (FMC). The SRC 3GPP gateway provides Gx-based integration with the Policy and Charging Rules Function (PCRF). The SRC 3GPP gateway uses the northbound Gx interface to mediate between the PCRF and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. The northbound Gx interface on the SRC 3GPP gateway communicates with the PCRF using the Diameter protocol.
3GPP Gy	The SRC 3GPP Gy is a Diameter-based component in the SRC software, which provides Gy-based integration with the Online Charging System (OCS), to provide FMC. The SRC 3GPP Gy uses the northbound Gy interface to handle charging-related information between the OCS and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. The northbound Gy interface communicates with the OCS using the Diameter protocol.
Web Application Service	The SRC software includes a Web application server that hosts the Web Services Gateway and the Volume Tracking Application (SRC VTA). In production environments, this application server is designed to host only these applications. However, you can load your own applications into this server for testing or demonstration purposes.
Web Services Gateway	Allows a gateway client—an application that is not part of the SRC network—to interact with SRC components through a Simple Object Access Protocol (SOAP) interface. The Web Services Gateway provides the Dynamic Service Activator which allows a gateway client to dynamically activate and deactivate SRC services for subscribers and to run scripts that manage the SAE.
Repository	
Directory	The SRC software includes the Juniper Networks database, which is a built-in Lightweight Directory Access Protocol (LDAP) directory for storing all SRC data including services, policies, and small subscriber databases. For large subscriber databases, you must supply your own directory.
SRC Configuration and Management Tools	
SRC command line interface (CLI)	Provides a way to configure the SRC software on a C Series Controller from a Junos OS–like CLI. The SRC CLI includes the policies, services, and subscribers CLI, which has separate access privileges.
C-Web interface	Provides a way to configure, monitor, and manage the SRC software on a C Series Controller through a Web browser. The C-Web interface includes a policies, services, and subscribers component, which has separate access privileges.
Simple Network Management Protocol (SNMP) agent	Monitors system performance and availability. It runs on all the SRC hosts and makes management information available through SNMP tables and sends notifications by means of SNMP traps.
Service Management Applications (Run on external system)	
IMS Services Gateway	Integrates into an IP multimedia system (IMS) environment. The SRC software provides a Diameter protocol-based interface that allows the SRC software to integrate with services found on the application layer of IMS.

Table 4: Descriptions of SRC Components (*continued*)

Component	Description
SRC Programming Interfaces	
NETCONF API	Allows you to configure or request information from the NETCONF server on a C Series Controller that runs the SRC software. Applications developed with the NETCONF API run on a system other than a C Series Controller.
CORBA plug-in service provider interface (SPI)	Tracks sessions and enables linking the rest of the service provider's operations support system (OSS) with the SRC software so that the OSS can be notified of events in the life cycle of SAE sessions. Hosted plug-ins only.
CORBA remote API	Provides remote access to the SAE core API. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
NIC access API	Performs NIC resolutions. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
SAE core API	Controls the behavior of the SRC software. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
Script services	Provides an interface to call scripts that supply custom services such as provisioning policies on a number of systems across a network.
VTA API	The Volume Tracking Application (VTA) API is a Simple Object Access Protocol (SOAP) interface that allows developers to create gateway clients and that administrators use to manage VTA subscribers and sessions. The SRC Web Services Gateway allows a gateway client—an application that is not part of the SRC network—to interact with SRC components, such as the VTA, through a SOAP interface.
Authorization and Accounting Applications	
AAA RADIUS servers	Authenticates subscribers and authorizes their access to the requested system or service. Accepts accounting data—time active and volume of data sent—about subscriber and service sessions. RADIUS servers run on a system other than a C Series Controller.
SRC Admission Control Plug-In (SRC ACP)	Authorizes and tracks subscribers' use of network resources associated with services that the SRC application manages.
Flat file accounting	Stores tracking data to accounting flat files that can be made available to external systems that send the data to a rating and billing system.
Volume Tracking Application	<p>The SRC Volume Tracking Application (SRC VTA) is an SRC component that allows service providers to track and control the network usage of subscribers and services. You can control volume and time usage on a per-subscriber or per-service basis. This level of control means that service providers can offer tiered services that use volume as a metric, while also controlling abusive subscribers and applications.</p> <p>When a subscriber or service exceeds bandwidth limits (or quotas), the SRC VTA can take actions including imposing rate limits on traffic, sending an e-mail notification, or charging extra for additional bandwidth consumed.</p>
Demonstration Applications (available on the Juniper Networks Website)	

Table 4: Descriptions of SRC Components *(continued)*

Component	Description
Enterprise Audit Plug-In	Defines a callback interface, which receives events when IT managers complete specified operations.
Enterprise Manager Portal	<p>Allows service providers to provision services for enterprise subscribers on routers running JunosE or Junos OS and allows IT managers to manage services.</p> <p>Enterprise Manager Portal can be used with NAT Address Management Portal to allow service providers to manage public IP addresses for use with NAT services on routers running Junos OS and to allow IT managers to make requests about public IP addresses through the Enterprise Manager Portal.</p>
Monitoring Agent application	Integrates IP address managers, such as a DHCP server or a RADIUS server, into an SRC-managed network so that the SAE is notified about subscriber events. The Monitoring Agent application runs on a Solaris platform.
Residential service selection portals	Provides a framework for building Web applications that allow residential and enterprise subscribers to manage their own network services. It comes with several full-featured sample Web applications that are easy to customize and suitable for deployment. The Residential service selection portals run on a Solaris platform.
Sample enterprise service portal	Lets service providers supply an interface to their business customers for managing and provisioning services.

Related Documentation • [SRC Product Description](#)

CHAPTER 2

License Overview

- [Types of SRC Licenses on page 7](#)
- [Obtaining an SRC License on page 8](#)

Types of SRC Licenses

You must obtain a license for the SRC software from the Juniper Networks License Management System. Juniper Networks provides server licenses for the SRC software.

The server license limits the number of concurrent active SAE service sessions. The server license is managed by the SRC license server, which reads the license, leases a portion of the license on demand to each SAE client, monitors the consumption of the license, and raises alarms when necessary. For server licenses, the SAE client does not involve the directory for license management. Use the server license for a production implementation of the SRC software.

The server license replaces the production license used in earlier releases of the SRC software. A production license limited the capacity of the entire network under SAE management and optionally specified the maximum number of SAE services that were concurrently available to be activated by subscribers, an expiration date, or both.



NOTE: The license server must be the same version as the SAE. For example, if you are using the license server and upgrade the SAE version, you must upgrade the license server to the same version.

A pilot license for 100 subscribers is installed on the system by default. If you have not imported a server license, the SRC software uses the pilot license.

If you have both a server license and a pilot license, the SRC software enforces the server license.

Related Documentation

- [Obtaining an SRC License on page 8](#)
- [Installing Server Licenses for C Series Controllers \(SRC CLI\) on page 19](#)

Obtaining an SRC License

Before you install the SRC software, collect information about the system that will run the SAE and provide this system information to obtain a license.

To obtain a server license, you must log into the Juniper Networks License Management System at http://www.juniper.net/generate_license and provide the following information:

- Authorization code provided with your order
- Serial number of your device on side of the unit
- Hostname of the license server

You can determine the serial number and hostname by issuing this command on a C Series Controller:



NOTE: When you issue the `show system information` command in a virtualized SRC software, the manufacturer, version, and serial number details are not displayed in the output. In addition, the product name is displayed as vSRC.

```
user@host> show system information
```

Look for the **Hostname** and **Serial Number** values in the output.

Related Documentation

- [Types of SRC Licenses on page 7](#)
- [Installing Server Licenses for C Series Controllers \(SRC CLI\) on page 19](#)

CHAPTER 3

SRC License Server Overview

- [SRC License Server Overview on page 9](#)
- [Unsuccessful Connections from the SAE to the SRC License Server on page 12](#)
- [SRC License Server Redundancy on page 12](#)
- [About SRC License Server Alarms on page 13](#)

SRC License Server Overview

- [About the SRC License Server on page 9](#)
- [License Server Errors on page 9](#)
- [License Requests on page 10](#)
- [Lease Renewal on page 11](#)
- [Directory Location and Access on page 11](#)

About the SRC License Server

The SRC license server manages server licenses for the SAE by using Common Object Request Broker Architecture (CORBA) to communicate with its client SAEs.

The SAE retrieves its licensing configuration properties from the SRC directory at startup. The license manager for an SAE maintains the licenses for that SAE and communicates with the license server to obtain more licenses or return unused licenses. You can configure properties specific to each SAE license manager.

The server license includes a license key signature, customer name, expiration date, number of concurrent active service sessions, a CORBA reference for the license server, and other attributes.

The CORBA reference enables the license server's SAE clients to locate the server to obtain a license unit. (A license unit is also referred to as a lease.) The SAE disregards who activates service sessions and simply monitors the number of active service sessions.

License Server Errors

If the license checking process does not discover a valid license, it logs an error message and terminates itself. This check can take a while to finish; on a slow server at the first start after an installation, it can take up to several minutes.

You may wish to look at the information log during the startup for a message declaring a missing license or indicating that the SAE startup has been completed.

License Requests

When the license server receives a request for a lease from the SAE, the license server calculates the number of leases in use if the request is granted and compares that value to a limit specified in the license:

- When the new total is below the limit, the license server grants the requested lease to the client.
- If the new total exceeds the limit, the license server grants leases up to the amount available.
- If the current total exceeds the license limit, the license server denies all requests.

On startup, client SAEs search for a valid license in the LDAP object `cn=@License, ou=licSvr, ou=Licenses, o=Management, <base>`. If the SAE finds a valid license that includes a reference to the license server (`license.server.corbaloc` property), then before it activates new service sessions the SAE contacts the license server to lease a license unit. The SAE request includes the name of a virtual router that it associates with service sessions.

When a lease is granted, it specifies the:

- Service-session-unit-size—Number of active service sessions
- Lease duration—Length of time allotted to a grant
- Allocation threshold—A percentage of the license service-session-unit-size that defines how many licenses are available for allocation
- Release threshold—A percentage of the license service-session-unit-size that defines when a lease is released

The license server stores the number of granted license units associated with each virtual router name in an internal table.

Because license leases are allocated in advance of actual need, a license is available when a subscriber tries to activate a service. The SAE requests an additional license lease when the number of active service sessions on a particular virtual router reaches the allocation threshold.

Example: License Allocation

This example shows how the SAE requests another lease when its current lease reaches a specified threshold. For a service-session-unit-size of 50 and an allocation threshold of 90%, the SAE requests a second lease when the number of active service sessions reaches 45 ($50 \times 90\%$). Once the lease is granted, if the active service sessions continue to increase, the SAE requests another lease when the number of active service sessions reaches 95, and again at 145.

Example: License Release Example

License units are released as active service sessions decrease, with the SAE retaining more licenses than it currently needs to avoid fluctuation around the threshold. For example, a lease has a service-session-unit-size of 50, a release threshold of 10%, and four license chunks (200 licenses) allocated to the SAE. In this case:

- If the number of active service sessions drops to 105, the fourth license unit is released, leaving three units and 150 licenses.
- If the number of active service sessions drops to 55, the third license unit is released, leaving two units and 100 licenses.
- If the number of active service sessions drops to 5, the second license unit is released, leaving one unit and 50 licenses.

Lease Renewal

The SAE renews a lease every one-third of the lease duration even if the number of active service sessions stays in the same range. If the SAE cannot renew the lease for any reason (such as a network failure) before the lease expires, the SAE releases the lease and does not accept new service sessions until it receives a new grant from the license server.

While in this state, the SAE logs an error message for each request and returns the same message through the API. The message includes the service name, subscriber, and reason for rejection.

Directory Location and Access

Server licenses are stored in the directory entry *cn=@License, ou=licSvr, ou=Licenses, ou=Configuration, o=Management, <base>*. The authentication distinguished name (DN) and password needed to access the license object are stored in the */opt/UMC/licsvr/etc/bootstrap.properties* file. The license server reads its configuration properties from the object (default) *l=config, l=LICSVR, ou=staticConfiguration, ou=Configuration, o=Management, <base>*.

The license server reads the license from the SRC directory at startup. The license server continues to poll the directory to check for updated licenses. The master license is *cn=@License*. The license server does not accept client requests without the master license. You can add more licenses to increase the limit on the number of service sessions. Adding these licenses does not require restarting the license server.

Related Documentation

- [SRC License Server Redundancy on page 12](#)
- [Unsuccessful Connections from the SAE to the SRC License Server on page 12](#)
- [Obtaining an SRC License on page 8](#)
- [Installing Server Licenses for C Series Controllers \(SRC CLI\) on page 19](#)

Unsuccessful Connections from the SAE to the SRC License Server

If the SAE fails to connect to the license server at startup or the license does not include the CORBA reference, then the SAE goes into a fallback mode and looks for a server license of the type issued for earlier releases of the SRC software. These early licenses limited the capacity of the network managed by the SAE and/or the number of SAE services that were concurrently available to be activated by subscribers; Juniper Networks no longer issues these licenses.

If the SAE cannot find any server licenses, then it looks for a pilot license associated in the directory with its host ID. If the SAE cannot obtain a license, it closes itself.

The SAE polls the directory at specified intervals to detect license upgrades or additions. Server licenses are preferred over pilot licenses. If the SAE detects a license with a higher preference than the one in current use, it switches to that license. For example, if the SAE is using a pilot license and detects a server license, it switches to the server license.

If the current license is removed from the directory or if the directory becomes unavailable, the SAE goes into an idle mode and does not accept any further requests to activate a new service session.

Related Documentation

- [Obtaining an SRC License on page 8](#)
- [SRC License Server Overview on page 9](#)

SRC License Server Redundancy

When a primary SAE becomes unavailable, the secondary SAE issues a request to take over the service sessions from the primary SAE. Because the license server keeps track of granted license units by associating them with virtual routers, the secondary SAE is always granted license units for the same virtual routers that the primary SAE has been managing.

If an SAE loses connectivity to the license server, the SAE continues to grant licenses up to the maximum number of licenses configured for the license server for up to 14 days. Subscribers connecting to the SAE should see no service disruption.

When the SAE has access to the license server again, the total number of licenses in use is evaluated. License grants are made on a first-come first-served basis, with SAEs being granted licenses within the license limit:

- If the total number of licenses in use is lower than the licenses limit, all SAEs continue operating in the same manner as before the outage.
- If the total number of licenses in use is higher than the license limit, an SAE does not receive new license grants if it asks to renew its licenses. Each SAE continues to grant service sessions within the licenses currently owned. The SAE does not terminate any active sessions.

- Related Documentation**
- [SRC License Server Overview on page 9](#)

About SRC License Server Alarms

The license server provides notifications when licensing thresholds are exceeded. [Table 5 on page 13](#) describes the conditions that prompt a warning or an alarm.

Table 5: SRC SNMP Warnings and Alarms

Condition	Notification to SRC SNMP Agent
Number of licenses in use exceeds a user-defined threshold.	Minor warning SNMP trap
License reaches its expiration date.	saeUserLicenseExpiry warning SNMP event trap
Number of service sessions exceeds the number available.	saeServiceSessionLicense warning SNMP event trap
Number of licenses in use reaches the license limit.	Major warning SNMP trap
Major alarm state continues for 1 week.	Escalation to critical

The license server continues to run during a critical alarm state but denies all requests for licenses. The license server clears the alarm when the alarm is no longer active.

You can configure the license server to send warnings and alarms, and can configure an SNMP host to receive the warnings and alarms.



NOTE: The SRC SNMP agent takes no action when it receives any of these traps. You must determine appropriate measures to resolve these warning states.

- Related Documentation**
- [SRC License Server Overview on page 9](#)
 - [Unsuccessful Connections from the SAE to the SRC License Server on page 12](#)
 - [SNMP Traps Overview](#)
 - [Configuring License Server Alarms \(SRC CLI\) on page 27](#)
 - [Configuration Statements for SRC License Server Properties on page 37](#)

CHAPTER 4

License Reports

- [About SRC License Reports on page 15](#)

About SRC License Reports

At the beginning of each month, the SRC software generates a report that provides information about license usage. You can view information about license usage from the CLI or configure the SRC software to send the reports through e-mail to administrators. You can also create a new license usage report at any time. The system stores only one license usage report per month. When you create a report, the system replaces a previous report generated in the same month with the new one.

The report lists the date the report was created, and for each license the customer identification information, the license serial number, and the number of licenses installed. It also lists the number of concurrent active SAE service sessions (maximum number of license units) that can be allocated, and the maximum number of concurrent active SAE service sessions allocated since the license was installed or since the last license usage report was created.

The system stores license usage reports in files. The filename syntax for reports is report-year-month.txt; for example, **report-2008-12.txt**. The following sample license usage report shows the format of the report. The message is sent best-effort; therefore, there is no guarantee that the signature in the report can be trusted.

```
License-Usage Report
Date: 2008-08-01
Customer: <customer>
Serial Number: <sn>
Installed: #####
-----BEGIN SIGNATURE-----
<Base-64 encoded signature>
-----END SIGNATURE-----
```

For example:

```
License-Usage Report
Date: 2008-11-01
Customer: MyCompany
Serial Number: <sn>
Installed: #####
-----BEGIN SIGNATURE-----
<Base-64 encoded signature>
```

-----END SIGNATURE-----

- Related Documentation**
- [SRC License Server Overview on page 9](#)
 - [Creating SRC License Usage Reports \(SRC CLI\) on page 33](#)
 - [Sending SRC License Usage Reports to Administrators \(SRC CLI\) on page 34](#)

PART 2

Installation

- [License Installation on page 19](#)

CHAPTER 5

License Installation

- [Installing Server Licenses for C Series Controllers \(SRC CLI\) on page 19](#)
- [Installing Server Licenses \(C-Web Interface\) on page 20](#)

Installing Server Licenses for C Series Controllers (SRC CLI)

To use a server license on a C Series Controller, a Juniper Networks database must run on the same C Series Controller as the license server.

To install server licenses for C Series Controllers:

1. From operational mode, install the server license.

```
user@host> request license import file-name file-name
```

To install the license as the master license.

```
user@host> request license import file-name file-name master-license
```

2. Verify that a valid license is available.

```
user@host> show sae licenses
```

3. Enable the license server.

```
user@host> enable component licSrv
```

4. Configure license manager for the SAE.

See [“Configuring License Manager for an SAE on a C Series Controller \(SRC CLI\)” on page 23](#).

Related Documentation

- [Obtaining an SRC License on page 8](#)
- [SRC License Server Overview on page 9](#)
- [Types of SRC Licenses on page 7](#)

Installing Server Licenses (C-Web Interface)

To use a server license on a C Series Controller, a Juniper Networks database must run on the same C Series Controller as the license server.

To install server licenses for C Series Controllers:

1. Click **Manage>Enable** to enable the license server.

The Enable pane appears.

In the Component box, select **licSvr**, and click **OK**.

2. Click **Manage>Request>License>Import** to install the server license.
3. Enter information as described in the Help text in the main pane, and click **OK**.
4. Click **Monitor>SAE>Licenses** to verify that a valid license is available.
5. Configure license manager for the SAE.

See [“Configuring License Manager for an SAE \(C-Web Interface\)”](#) on page 25.

Related Documentation

- [Obtaining an SRC License on page 8](#)
- [SRC License Server Overview on page 9](#)
- [Types of SRC Licenses on page 7](#)

PART 3

Configuration

- [Configuration Tasks for License Manager on page 23](#)
- [Configuration Tasks for License Server on page 27](#)
- [Configuration Tasks for License Reports on page 33](#)
- [Configuration Statements and Commands on page 37](#)

CHAPTER 6

Configuration Tasks for License Manager

- [Configuring License Manager for an SAE on a C Series Controller \(SRC CLI\) on page 23](#)
- [Configuring License Manager for an SAE \(C-Web Interface\) on page 25](#)

Configuring License Manager for an SAE on a C Series Controller (SRC CLI)

Use the following configuration statements to configure the SAE license manager at the **[edit]** hierarchy level.

```
shared sae configuration license-manager client {
  type type ;
  cache cache ;
}
shared sae configuration license-manager directory-access {
  server-address server-address ;
  server-port server-port ;
  license-dn license-dn ;
  authentication-dn authentication-dn ;
  password password ;
  (ldaps);
  connection-manager-id connection-manager-id ;
  event-base-dn event-base-dn ;
  signature-dn signature-dn ;
  snmp-agent;
}
```

For detailed information about each configuration statement, see the *SRC PE CLI Command Reference*.

To configure the SAE license manager:

1. From configuration mode, access the configuration statement that configures the SAE client for the license manager at the **[edit]** hierarchy level.

```
[edit]
user@host# edit shared sae configuration license-manager client
```

2. Specify the client type.

```
[edit shared sae configuration license-manager client]
user@host# edit type SDX
```

SDX is the only supported license type.

3. Specify the path to the cache file.

```
[edit shared sae configuration license-manager client]
user@host# edit cache cache
```

The default is `var/run/lic_cache`.

4. Access the configuration statement that configures directory access for the SAE client for the license manager at the `[edit]` hierarchy level.

```
[edit shared sae configuration license-manager client]
user@host# up
```

```
[edit shared sae configuration license-manager]
user@host# edit directory-access
```

```
[edit shared sae configuration license-manager directory-access]
user@host#
```

5. (Optional) Specify the IP address or hostname of the server that stores licensing data.

```
[edit shared sae configuration license-manager directory-access]
user@host# set server-address server-address
```

6. Specify the port number of the LDAP connection to the directory server that stores licensing data.

```
[edit shared sae configuration license-manager directory-access]
user@host# set server-port server-port
```

The default port is 389.

7. Specify the DN of the subtree in the directory where licensing information is stored. The SAE searches for the license key below this path.

```
[edit shared sae configuration license-manager directory-access]
user@host# set license-dn license-dn
```

The default is `ou=Licenses,o=Management,<base>`.

8. Specify the DN used by the SAE to authenticate access to the directory server.

```
[edit shared sae configuration license-manager directory-access]
user@host# set authentication-dn authentication-dn
```

The default is `cn=license-operator,o=Operators,<base>`.

9. Specify the password used to authenticate access to the directory.

```
[edit shared sae configuration license-manager directory-access]
user@host# se password password
```

10. (Optional) Enable LDAPS as the secure protocol for connections to the directory server that stores license data.

```
[edit shared sae configuration license-manager directory-access]
user@host# set ldaps
```

11. Specify the connection manager for the directory eventing system within the Java Naming and Directory Interface (JNDI) framework

```
[edit shared sae configuration license-manager directory-access]
user@host# set connection-manager-id connection-manager-id
```

The default is LICENSE_MANAGER.

12. (Optional) Specify the base DN for the license manager data.

```
[edit shared sae configuration license-manager directory-access]
user@host# set event-base-dn event-base-dn
```

The default is <base> which refers to the globally configured base DN.

13. (Optional. Not needed if you use the Juniper Networks database.) Specify the DN of the entry identified by the LDAP schema attribute usedDirectory. This attribute identifies the type of directory, such as DirX on which the license data is stored.

```
[edit shared sae configuration license-manager directory-access]
user@host# set signature-dn signature-dn
```

14. (Optional) Enable the SRC SNMP agent to export MIBs for this directory connection.

```
[edit shared sae configuration license-manager directory-access]
user@host# set snmp-agent
```

Related Documentation

- [Obtaining an SRC License on page 8](#)
- [Types of SRC Licenses on page 7](#)
- [Unsuccessful Connections from the SAE to the SRC License Server on page 12](#)

Configuring License Manager for an SAE (C-Web Interface)

To configure the SAE license manager:

1. Click **Configure**, expand **Shared>SAE**, and then click the SAE group for which you want to configure the SAE client for the license manager.
2. In the side pane, expand **Configuration>License Manager**, and then click **Client**.
The Client pane appears.
3. Enter information as described in the Help text in the main pane, and click **Apply**.
4. In the side pane, expand **Configuration>License Manager**, and then click **Directory Access**.

The Directory Access pane appears.

5. Enter information as described in the Help text in the main pane, and click **Apply**.

**Related
Documentation**

- [Obtaining an SRC License on page 8](#)
- [Types of SRC Licenses on page 7](#)
- [Unsuccessful Connections from the SAE to the SRC License Server on page 12](#)

Configuration Tasks for License Server

- Configuring License Server Alarms (SRC CLI) on page 27
- Specifying the ORB Configuration for the SRC License Server (SRC CLI) on page 28
- Configuring the License Server Repository (SRC CLI) on page 29
- Configuring License Server Properties (SRC CLI) on page 30
- Configuring the License Server Location (SRC CLI) on page 31

Configuring License Server Alarms (SRC CLI)

You can configure the license server to send alarms to system administrators through SNMP and e-mail messages.

Use the following configuration statements to configure the license server alarms:

```
shared license-server alarm {
  threshold threshold;
  report-server report-server;
}
```

```
shared license-server email {
  server server;
  alarm-report-address alarm-report-address;
}
```



NOTE: In most cases, you do not need to change the configuration for the license server. If you change the configuration, do so with care. The software needs to be able to communicate with the license server to operate correctly.

To configure license server alarms:

1. From configuration mode, access the configuration statement that configures alarms.

```
[edit]
user@host# edit shared license-server alarm
```

2. Specify the threshold as a percentage of the licensed capacity that, when exceeded, sends SNMP minor traps and initiates e-mail alerts to the system administrator.

```
[edit shared license-server alarm]
user@host# set threshold threshold
```

3. Specify the report server to receive warning traps.

```
[edit shared license-server alarm]
user@host# set report-server report-server
```

To configure an e-mail notification:

1. Access the configuration statement that configures e-mail notification.

```
[edit shared license-server alarm]
user@host# up
```

```
[edit shared license-server]
user@host# edit email
```

2. Specify the SMTP e-mail server to receive alarms and usage reports.

```
[edit shared license-server email]
user@host# set server server;
```

3. Specify an e-mail address of the system administrator to receive warning e-mail messages.

```
[edit shared license-server alarm]
user@host# set alarm-report-address alarm-report-address;
```

Related Documentation

- [SRC License Server Overview on page 9](#)
- [About SRC License Server Alarms on page 13](#)
- [Configuring the License Server Repository \(SRC CLI\) on page 29](#)
- [Configuration Statements for SRC License Server Properties on page 37](#)

Specifying the ORB Configuration for the SRC License Server (SRC CLI)

You can use the object request broker (ORB) configuration to define the location of the property file for the license server. Typically, you do not need to change this property.

Use the following configuration statements to specify the ORB configuration property file for the license server:

```
shared license-server corba {
  orb-configuration-property-file orb-configuration-property-file;
}
```



NOTE: In most cases, you do not need to change the configuration for the license server. If you change the configuration, do so with care. The software needs to be able to communicate with the license server to operate correctly.

To specify the ORB configuration:

1. From configuration mode, access the configuration statement that configures CORBA.

```
[edit]
user@host# edit shared license-server corba
```

- Specify the ORB configuration property file.

```
[edit shared license-server corba]
user@host# set orb-configuration-property-file orb-configuration-property-file
```

Related Documentation

- [SRC License Server Overview on page 9](#)
- [Configuring the License Server Repository \(SRC CLI\) on page 29](#)
- [Configuring License Server Properties \(SRC CLI\) on page 30](#)
- [Configuring the License Server Location \(SRC CLI\) on page 31](#)
- [Configuration Statements for SRC License Server Properties on page 37](#)

Configuring the License Server Repository (SRC CLI)

You can use the license server repository configuration to configure access to the Juniper Networks database for the license server.

Use the following configuration statements to configure the license server repository:

```
shared license-server repository {
  ldap-server-address ldap-server-address;
  server-port server-port;
  search-base search-base;
  authentication-dn authentication-dn;
  password password;
}
```



NOTE: In most cases, you do not need to change the configuration for the license server. If you change the configuration, do so with care. The software needs to be able to communicate with the license server to operate correctly.

To configure the license server repository:

- From configuration mode, access the configuration statement that configures the license server repository.

```
[edit]
user@host# edit shared license-server repository
```

- Specify the IP address or the hostname of the LDAP server that stores licensing data.

```
[edit shared license-server repository]
user@host# set ldap-server-address ldap-server-address
```



NOTE: This is a required property. If no value is assigned, the license server does not start. If this value is removed while the license server is running, the server rejects licensing requests. After a new value is entered and the license server connects to the LDAP server, the license server accepts license requests again.

- Specify the port number of the LDAP server that stores licensing data.

```
[edit shared license-server repository]
user@host# set server-port server-port
```

- Specify the base directory of the LDAP server that stores licensing data.

```
[edit shared license-server repository]
user@host# set search-base search-base
```

- Specify the DN used by the SAE to authenticate access to the LDAP server that stores licensing data.

```
[edit shared license-server repository]
user@host# set authentication-dn authentication-dn
```

- Specify the password used to authenticate access to the LDAP server that stores licensing data.

```
[edit shared license-server repository]
user@host# set password password
```

Related Documentation

- [SRC License Server Overview on page 9](#)
- [Specifying the ORB Configuration for the SRC License Server \(SRC CLI\) on page 28](#)
- [Configuring License Server Properties \(SRC CLI\) on page 30](#)
- [Configuring the License Server Location \(SRC CLI\) on page 31](#)
- [Configuration Statements for SRC License Server Properties on page 37](#)

Configuring License Server Properties (SRC CLI)

You can use the license server engine configuration to configure the general properties for the license server.

Use the following configuration statements to configure the license server general properties:

```
shared license-server engine {
  service-session-unit-size service-session-unit-size;
  sae-service-unit-size sae-service-unit-size;
  lease-renew-interval lease-renew-interval;
  allocate-license-threshold allocate-license-threshold;
  release-license-threshold release-license-threshold;
}
```



NOTE: In most cases, you do not need to change the configuration for the license server. If you change the configuration, do so with care. The software needs to be able to communicate with the license server to operate correctly.

To configure the license server general properties:

1. From configuration mode, access the configuration statement that configures license server general properties.

```
[edit]
user@host# edit shared license-server engine
```

2. Specify the size of each license unit for the service session property; this is the size of the license unit allocated to the SAE.

```
[edit shared license-server engine]
user@host# set service-session-unit-size service-session-unit-size
```

3. (Optional) Specify the size of each license unit for the SAE service property; this is the size of the license unit allocated to the SAE.

```
[edit shared license-server engine]
user@host# set sae-service-unit-size sae-service-unit-size
```

4. Specify the lease period for the licenses that the SAE client receives.

```
[edit shared license-server engine]
user@host# set lease-renew-interval lease-renew-interval
```

5. Specify the license threshold, as a percentage of the service-session-unit, at which the SAE client obtains more licenses.

```
[edit shared license-server engine]
user@host# set allocate-license-threshold allocate-license-threshold
```

6. Specify the license threshold, as a percentage of the service-session-unit, at which the SAE client releases one license unit.

```
[edit shared license-server engine]
user@host# set release-license-threshold release-license-threshold
```

Related Documentation

- [SRC License Server Overview on page 9](#)
- [Specifying the ORB Configuration for the SRC License Server \(SRC CLI\) on page 28](#)
- [Configuring the License Server Repository \(SRC CLI\) on page 29](#)
- [Configuring the License Server Location \(SRC CLI\) on page 31](#)
- [Configuration Statements for SRC License Server Properties on page 37](#)

Configuring the License Server Location (SRC CLI)

You can use the persistence control configuration to set the root directory, the working directory, and the cache file for the license server.

Use the following configuration statements to configure the license server location:

```
shared license-server persistence-control {
  root-directory-of-the-license-server root-directory-of-the-license-server;
  work-directory-of-the-license-server work-directory-of-the-license-server;
  license-server-state-cache-file license-server-state-cache-file;
}
```



NOTE: In most cases, you do not need to change the configuration for the license server. If you change the configuration, do so with care. The software needs to be able to communicate with the license server to operate correctly.

To configure the license server location:

1. From configuration mode, access the configuration statement that configures the license server location.

```
[edit]
user@host# edit shared license-server persistence-control
```

2. Specify the root directory of the license server.

```
[edit shared license-server persistence-control]
user@host# set root-directory-of-the-license-server root-directory-of-the-license-server
```

3. Specify the working directory of the license server, in which the license server states are saved.

```
[edit shared license-server persistence-control]
user@host# set work-directory-of-the-license-server
work-directory-of-the-license-server
```

4. Specify the cache file for the license server state information.

```
[edit shared license-server persistence-control]
user@host# set license-server-state-cache-file license-server-state-cache-file
```

**Related
Documentation**

- [SRC License Server Overview on page 9](#)
- [Configuring the License Server Repository \(SRC CLI\) on page 29](#)
- [Configuring License Server Properties \(SRC CLI\) on page 30](#)
- [Configuration Statements for SRC License Server Properties on page 37](#)

CHAPTER 8

Configuration Tasks for License Reports

- [Creating SRC License Usage Reports \(SRC CLI\) on page 33](#)
- [Creating SRC License Usage Reports \(C-Web Interface\) on page 33](#)
- [Sending SRC License Usage Reports to Administrators \(SRC CLI\) on page 34](#)
- [Sending SRC License Usage Reports to Administrators \(C-Web Interface\) on page 34](#)

Creating SRC License Usage Reports (SRC CLI)

Create a report to compare the maximum number of concurrent active SAE service sessions in use since the last report with the number of sessions allowed by the server license.

The SRC software generates a report at the beginning of each month. You can create a new report at any time. If you configured reports to be sent through e-mail, the SRC software sends a report after you create it.

To create a license usage report:

```
user@host> request license usage-report
```

Generated Usage Report

Related Documentation

- [Monitoring SRC License Usage \(SRC CLI\) on page 41](#)
- [Sending SRC License Usage Reports to Administrators \(SRC CLI\) on page 34](#)

Creating SRC License Usage Reports (C-Web Interface)

Create a report to compare the maximum number of concurrent active SAE service sessions in use since the last report with the number of sessions allowed by the server license.

The SRC software generates a report at the beginning of each month. You can create a new report at any time. If you configured reports to be sent through e-mail, the SRC software sends a report after you create it.

To create a license usage report:

1. Click **Manage>Request>License>Usage Report**.

The Usage Report pane appears.

2. Enter information as described in the Help text in the main pane, and click **OK**.

**Related
Documentation**

- [Monitoring SRC License Usage \(C-Web Interface\) on page 42](#)
- [Sending SRC License Usage Reports to Administrators \(C-Web Interface\) on page 34](#)
- [About SRC License Reports on page 15](#)

Sending SRC License Usage Reports to Administrators (SRC CLI)

Send license usage reports to system administrators or others to have them monitor the maximum number of concurrent active SAE service sessions and compare that number with the number allowed by the server license.

To specify users to receive SRC license usage reports:

1. From configuration mode, access the configuration statement for license server e-mail configuration.

```
[edit]  
user@host# edit shared license-server email
```

2. Specify the e-mail server. for example:

```
[edit shared license-server email]  
user@host> set server my-server.mycompany.com
```

3. Specify one or more e-mail addresses. Use commas to separate addresses. For example:

```
[edit shared license-server email]  
user@host> set usage-report-address CBee@mycompany.com, SJones@mycompany.com,  
JSmith@mycompany.com
```

**Related
Documentation**

- [Creating SRC License Usage Reports \(SRC CLI\) on page 33](#)
- [About SRC License Reports on page 15](#)

Sending SRC License Usage Reports to Administrators (C-Web Interface)

Send license usage reports to system administrators or others to have them monitor the maximum number of concurrent active SAE service sessions and compare that number with the number allowed by the server license.

To specify users to receive SRC license usage reports:

1. Click **Configure**, expand **Shared>License Server>Email**.

The Email pane appears.

2. Enter information as described in the Help text in the main pane, and click **Apply**.

**Related
Documentation**

- [Creating SRC License Usage Reports \(C-Web Interface\) on page 33](#)
- [About SRC License Reports on page 15](#)

Configuration Statements and Commands

- [Configuration Statements for SRC License Server Properties on page 37](#)

Configuration Statements for SRC License Server Properties

Use the following configuration statements to configure license server properties at the **[edit]** hierarchy level:

```
shared license-server alarm {
  threshold threshold;
  report-server report-server;
}

shared license-server email {
  server server;
  alarm-report-address alarm-report-address;
}

shared license-server corba {
  orb-configuration-property-file orb-configuration-property-file;
}

shared license-server repository {
  ldap-server-address ldap-server-address;
  server-port server-port;
  search-base search-base;
  authentication-dn authentication-dn;
  password password;
}

shared license-server engine {
  service-session-unit-size service-session-unit-size;
  sae-service-unit-size sae-service-unit-size;
  lease-renew-interval lease-renew-interval;
  allocate-license-threshold allocate-license-threshold;
  release-license-threshold release-license-threshold;
}
```

```
shared license-server persistence-control {  
  root-directory-of-the-license-server root-directory-of-the-license-server;  
  work-directory-of-the-license-server work-directory-of-the-license-server;  
  license-server-state-cache-file license-server-state-cache-file;  
}
```

shared license-server logging logger *name* ...

```
shared license-server logging logger name file-logger {  
  filter filter;  
  filename filename;  
  rollover-filename rollover-filename;  
  maximum-file-size maximum-file-size;  
}
```

```
shared license-server logging logger name syslog-logger {  
  filter filter;  
  host host;  
  facility facility;  
  format format;  
}
```

For detailed information about each configuration statement, see the *SRC PE CLI Command Reference*.

**Related
Documentation**

- [Logging for SRC Components Overview](#)
- [Configuring License Server Properties \(SRC CLI\) on page 30](#)
- [Specifying the ORB Configuration for the SRC License Server \(SRC CLI\) on page 28](#)
- [SRC License Server Overview on page 9](#)

PART 4

Administration

- [Routine Monitoring on page 41](#)

Routine Monitoring

- Monitoring SRC License Usage (SRC CLI) on page 41
- Monitoring SRC License Usage (C-Web Interface) on page 42
- Viewing Information About SAE Licenses (SRC CLI) on page 42
- Viewing Information About Licenses (C-Web Interface) on page 43
- Viewing SNMP Information for Client Licenses (SRC CLI) on page 44
- Viewing SNMP Statistics for Client Licenses (C-Web Interface) on page 44
- Viewing SNMP Information for Local Licenses (SRC CLI) on page 45
- Viewing SNMP Statistics for Local Licenses (C-Web Interface) on page 45
- Viewing SNMP Information for Licenses on Virtual Routers (SRC CLI) on page 46
- Viewing SNMP Statistics for Licenses by Device (C-Web Interface) on page 47

Monitoring SRC License Usage (SRC CLI)

Purpose Monitor the maximum number of concurrent service sessions in use per virtual router since the last time a usage report was generated, and compare this number with the maximum number of sessions allowed by the SRC server license.

Action View the maximum concurrent service sessions for all licenses allocated.

```
user@host> show license allocated
```

```
Allocated Licenses
Virtual router name default@junos1
Enforcement type   service sessions
Granted           50
Last Granted      Wed Nov 19 08:37:43 EST 2008
Expiration        Wed Nov 19 08:37:43 EST 2008
```

```
Allocated Licenses
Virtual router name default@junose_vr1
Enforcement type   service sessions
Granted           0
```

Meaning [Table 6 on page 42](#) describes the output fields for the `show license-server allocated-licenses` command. Output fields are listed in the order in which they appear.

Table 6: Output Fields for the show license-server allocated-licenses Command

Field Name	Field Description
Allocated Licenses	Section of the output that provides license information for a particular virtual router
Virtual router name	Virtual router associated with an SRC server license
Enforcement type	Type of enforcement provided by the license. For SRC, the only license type is service sessions.
Granted	Maximum number of concurrent active SAE service sessions allocated by the SAE.
Last granted	Last time the SAE allocated a license unit that specifies the number of concurrent active SAE service sessions allowed.
Expiration	Time at which the allocation ends.

- Related Documentation**
- [Creating SRC License Usage Reports \(SRC CLI\) on page 33](#)
 - [Sending SRC License Usage Reports to Administrators \(SRC CLI\) on page 34](#)

Monitoring SRC License Usage (C-Web Interface)

Purpose Monitor the maximum number of concurrent service sessions in use per virtual router since the last time a usage report was generated, and compare this number with the maximum number of sessions allowed by the SRC server license.

Action View the maximum concurrent service sessions for all licenses allocated.

- Click **Monitor>License>Allocated** to view the maximum concurrent service sessions for all licenses allocated.

- Related Documentation**
- [Creating SRC License Usage Reports \(C-Web Interface\) on page 33](#)
 - [Sending SRC License Usage Reports to Administrators \(C-Web Interface\) on page 34](#)

Viewing Information About SAE Licenses (SRC CLI)

Purpose View the installed licenses.


```

Action user@host> show sae licenses
SSC License Key Checker V3.0

Type of license: Pilot. Status: OK.

The following valid licenses are found:

License: cn=83ced779,ou=Licenses,o=Management,o=UMC
license.val.component = 1
license.val.customer = buffy
license.val.expiry = 2007-02-23
license.val.nodeid = 83ced779
license.val.release = 7.*
license.val.seqnum = 00555
license.val.type = pilot
license.val.userSessions = 100

```

- Related Documentation**
- [Obtaining an SRC License on page 8](#)
 - [Viewing Information About Licenses \(C-Web Interface\) on page 43](#)
 - [Viewing Information About Policies on the SAE \(SRC CLI\)](#)

Viewing Information About Licenses (C-Web Interface)

Purpose View information about licenses.

Action 1. Click **Monitor>SAE >Licenses**.

The Licenses pane appears.

Figure 1: C-Web Interface for Monitoring SAE Licenses



2. In the Slot box, enter the number of the slot for which you want to display license information.
3. Click **OK**.

The Licenses pane displays license information.

- Related Documentation**
- Viewing SNMP Statistics for Licenses by Device (C-Web Interface) on page 47
 - Viewing SNMP Statistics for Local Licenses (C-Web Interface) on page 45
 - Viewing SNMP Statistics for Client Licenses (C-Web Interface) on page 44
 - Viewing SNMP Information for Local Licenses (SRC CLI) on page 45
 - Viewing SNMP Information for Client Licenses (SRC CLI) on page 44

Viewing SNMP Information for Client Licenses (SRC CLI)

Purpose View SNMP information about the state of client licenses.

Action user@host> `show sae statistics license client`

- Related Documentation**
- *Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS*
 - Viewing SNMP Statistics for Licenses by Device (C-Web Interface) on page 47
 - Viewing SNMP Statistics for Local Licenses (C-Web Interface) on page 45
 - Viewing SNMP Statistics for Client Licenses (C-Web Interface) on page 44
 - Viewing SNMP Information for Local Licenses (SRC CLI) on page 45

Viewing SNMP Statistics for Client Licenses (C-Web Interface)

Purpose View SNMP statistics for client licenses.

Action 1. Click **Monitor>SAE >Statistics>License>Client**.

The Statistics/License/Client pane appears.

Figure 2: C-Web Interface for Monitoring SNMP Statistics of Client Licenses



2. In the Slot box, enter the number of the slot for which you want to display SNMP statistics for client licenses.
3. Click **OK**.

The Statistics/License/Client pane displays statistics for client licenses.

Related Documentation

- [Viewing SNMP Statistics for Licenses by Device \(C-Web Interface\) on page 47](#)
- [Viewing SNMP Statistics for Local Licenses \(C-Web Interface\) on page 45](#)
- [Viewing SNMP Information for Local Licenses \(SRC CLI\) on page 45](#)
- [Viewing SNMP Information for Client Licenses \(SRC CLI\) on page 44](#)
- [Viewing SNMP Information for Licenses on Virtual Routers \(SRC CLI\) on page 46](#)

Viewing SNMP Information for Local Licenses (SRC CLI)

Purpose View SNMP information about the state of local licenses.

Action user@host> **show sae statistics license local**

Client License State

```
Mode                Pilot
Number of licensed users 100
Number of current users 0
Expiry              2007-02-23
```

Related Documentation

- [Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS](#)
- [Viewing SNMP Statistics for Licenses by Device \(C-Web Interface\) on page 47](#)
- [Viewing SNMP Statistics for Local Licenses \(C-Web Interface\) on page 45](#)
- [Viewing SNMP Statistics for Client Licenses \(C-Web Interface\) on page 44](#)
- [Viewing SNMP Information for Licenses on Virtual Routers \(SRC CLI\) on page 46](#)

Viewing SNMP Statistics for Local Licenses (C-Web Interface)

Purpose View SNMP statistics for local licenses.

Action 1. Click **Monitor>SAE >Statistics>License>Local**.

The Statistics/License/Local pane appears.

Figure 3: C-Web Interface for Monitoring SNMP Statistics of Local Licenses



2. In the Slot box, enter the number of the slot for which you want to display SNMP statistics for local licenses.
3. Click **OK**.

The Statistics/License/Local pane displays statistics for local licenses.

Related Documentation

- [Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS](#)
- [Viewing SNMP Information for Local Licenses \(SRC CLI\) on page 45](#)
- [Viewing SNMP Information for Client Licenses \(SRC CLI\) on page 44](#)
- [Viewing SNMP Information for Licenses on Virtual Routers \(SRC CLI\) on page 46](#)
- [Viewing SNMP Statistics for Client Licenses \(C-Web Interface\) on page 44](#)
- [Viewing SNMP Statistics for Licenses by Device \(C-Web Interface\) on page 47](#)

Viewing SNMP Information for Licenses on Virtual Routers (SRC CLI)

Purpose View SAE license information for the SRC software.

Action To view SNMP information about the state of licenses on specified virtual routers:

```
user@host> show sae statistics license device
```

To view information about the state of licenses for a particular virtual router, specify all or part of the VR name. For device drivers running Junos OS and PCMM drivers, use the format default@routerName.

```
user@host> show sae statistics license device name name
```

To view only the virtual router names:

```
user@host> show sae statistics license device brief
```

- Related Documentation**
- *Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS*
 - [Viewing SNMP Statistics for Local Licenses \(C-Web Interface\) on page 45](#)
 - [Viewing SNMP Statistics for Client Licenses \(C-Web Interface\) on page 44](#)
 - [Viewing SNMP Information for Local Licenses \(SRC CLI\) on page 45](#)
 - [Viewing SNMP Information for Client Licenses \(SRC CLI\) on page 44](#)

Viewing SNMP Statistics for Licenses by Device (C-Web Interface)

Purpose View SNMP statistics for licenses by device.

Action 1. Click **Monitor>SAE >Statistics>License>Device**.

The Statistics/License/Device pane appears.

Figure 4: C-Web Interface for Monitoring SNMP Statistics of Virtual Router Licenses

2. In the Device Name box, enter a full or partial device name for which you want to display information, or leave the box blank to display SNMP statistics for all devices.

For JunosE router drivers, use the format:

<virtual router name>@<router name>

For device drivers running Junos OS and PCMM drivers, use the format:

default@<router name>

3. In the Slot box, enter the number of the slot for which you want to display SNMP statistics for device licenses.

4. Select an output style from the Style list.

5. Click **OK**.

The Statistics/License/Device pane displays statistics for virtual router licenses.

**Related
Documentation**

- *Connections to Managed Devices*
- [Viewing SNMP Information for Local Licenses \(SRC CLI\) on page 45](#)
- [Viewing SNMP Information for Client Licenses \(SRC CLI\) on page 44](#)
- [Viewing SNMP Information for Licenses on Virtual Routers \(SRC CLI\) on page 46](#)
- [Viewing SNMP Statistics for Client Licenses \(C-Web Interface\) on page 44](#)
- [Viewing SNMP Statistics for Local Licenses \(C-Web Interface\) on page 45](#)

PART 5

Troubleshooting

- [Troubleshooting Procedures on page 51](#)

Troubleshooting Procedures

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 51](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 52](#)
- [Viewing Graphs \(C-Web Interface\) on page 53](#)
- [Viewing Graphs from a Webpage on page 53](#)

Collecting Data with the Activity Monitor (SRC CLI)

You can collect data with the Activity Monitor for specific components over a specified time and save them to a tar.gz file in the `/opt/UMC/activity/var/agnostic/*` directory. You can view the exact file name and path after you execute the **request support information** command. Before you perform data collection with the Activity Monitor, make sure the filter for the specific components is enabled.

To perform data collection with the Activity Monitor:

- `user@host> request support information`

Some of the information retrieved includes:

- System log messages from the `/var/log/messages/*` directory.
- The configuration in text format, XML format, and set format.
- The hostname in the name of the diagnostic file.

To perform data collection for specific components:

- `user@host> request support information component`

where ***component*** is one of the following:

- `acp`—SRC Admission Control Plug-In
- `activity`—Activity Monitor
- `agent`—SNMP agent
- `appsvr`—Application server
- `cli`—SRC CLI
- `diameter`—Diameter application

- dsa—Dynamic Service Activator
- extsubmon—External Subscriber Monitor
- ims—IP multimedia subsystem
- jdb—Juniper Networks database
- jps—Juniper Policy Server
- licSvr—License server
- nic—Network information collector
- redir—Redirect server
- sae—SAE
- webadm—C-Web interface

To perform data collection for a specified number of days:

- `user@host> request support information days`
where *days* is in the range of 1–36500.

**Related
Documentation**

- *Before You Load a Configuration*
- [Viewing Graphs \(C-Web Interface\) on page 53](#)
- [Viewing Graphs from a Webpage on page 53](#)
- *Monitoring Activity on C Series Controllers*

Collecting Data with the Activity Monitor (C-Web Interface)

You can collect data with the Activity Monitor for specific components over a specified time. Before you configure data collection for the Activity Monitor, make sure the Activity Monitor (activity), CLI (cli), and C-Web interface (webadm) components are enabled.

To perform data collection with the Activity Monitor:

1. Click **Manage>Request>Support>Information**.
The Support Information pane appears.
2. From the Components list, select the components you want to monitor, and click **OK**.
3. (Optional) Enter the number of days for which you want to collect data, and click **OK**.

**Related
Documentation**

- [Viewing Graphs \(C-Web Interface\) on page 53](#)
- [Viewing Graphs from a Webpage on page 53](#)
- *Monitoring Activity on C Series Controllers*

Viewing Graphs (C-Web Interface)

You can display graphs for components for which the Activity Monitor has collected data.

To display graphs from the Activity Monitor with the C-Web interface:

1. Click **Graphs**.
2. In the side pane, select the component and the graph that you want to display.
The pane for selecting the time period displayed by the graph appears.
3. Select one of the preset values or enter the time range in the From and To boxes, and click **OK**.

The graphs appear.

Related Documentation

- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 52](#)
- [Viewing Graphs from a Webpage on page 53](#)
- [Monitoring Activity on C Series Controllers](#)

Viewing Graphs from a Webpage

You can display graphs for components for which the Activity Monitor has collected data from a webpage. Before you display these graphs, make sure the Activity Monitor (activity) and C-Web interface (webadm) components are enabled. For more secure displays, configure the C-Web interface to use HTTPS and use POST requests.

- [Viewing Graphs for a Preset Time Period from a Webpage on page 53](#)
- [Viewing Graphs for Specified Time Periods from a Webpage on page 54](#)

Viewing Graphs for a Preset Time Period from a Webpage

To display graphs with preset time periods from the Activity Monitor from a webpage:

`http://ip-address/graph?&id=username&pw=password&name=graph-name&time=time-period`

where

- *ip-address*—IP address of the C Series Controller
- *username*—Username used to log in to the C Series Controller
- *password*—Password used to log in to the C Series Controller
- *graph-name*—Name of graph to display in the format `<component>-<graph>`, where `<graph>` is the name of the graph as specified in the C-Web interface in all lowercase letters with hyphens separating words
- *time-period*—Period of time that data was collected for display in a graph in the format `<number><units>`

The *<number>* is the number of *<units>*, which are specified as one of the following values:

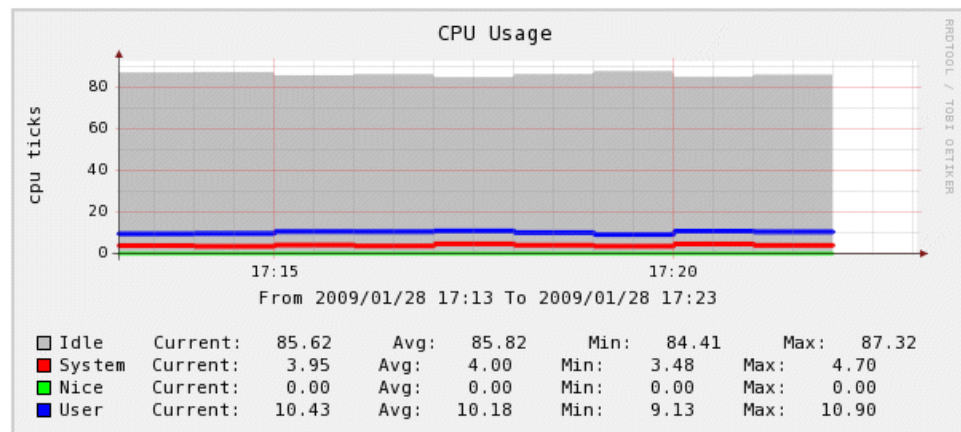
- m—minutes
- h—hours
- d—days
- w—weeks
- M—months
- y—years

For example, to view the CPU graph for the System component for the past 10 minutes on the C Series Controller called c2000 for the user admin:

<http://c2000/graph?&id=admin&pw=secret&name=system-cpu&time=10m>

The CPU Usage graph appears.

Figure 5: Sample CPU Usage Graph



Viewing Graphs for Specified Time Periods from a Webpage

To display graphs for specified time periods from the Activity Monitor from a webpage:

<http://ip-address/graph?&id=username&pw=password&name=graph-name&start=date-time&end=date-time>

where

- *ip-address*—IP address of the C Series Controller
- *username*—Username used to log in to the C Series Controller
- *password*—Password used to log in to the C Series Controller

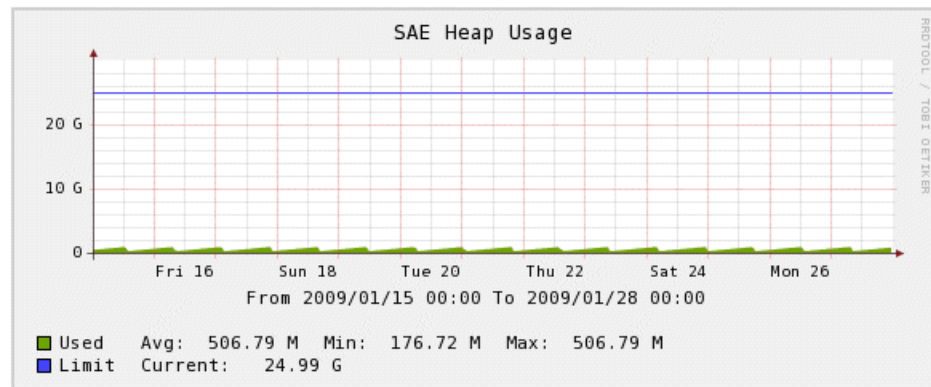
- *graph-name*—Name of graph to display in the format `<component>-<graph>`, where `<graph>` is the name of the graph as specified in the C-Web interface in all lowercase letters with hyphens separating words
- *date-time*—Date and time that data was collected for display in a graph in the format `yyyyMMddHHmm`, where:
 - `yyyy`—year
 - `MM`—month
 - `dd`—day
 - `HH`—hour
 - `mm`—minute

For example, to view the heap usage graph for the SAE component from January 15 to January 28 on the C Series Controller called `c2000` for the user `admin`:

`http://c2000/graph?id=admin&pw=secret&name=sa-e-heap&start=200901150000&end=200901280000`

The SAE Heap Usage graph appears.

Figure 6: Sample SAE Heap Usage Graph



Related Documentation

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 51](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 52](#)
- [Viewing Graphs \(C-Web Interface\) on page 53](#)
- [Monitoring Activity on C Series Controllers](#)

PART 6

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