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# Third-Party Network Devices with Scripting Service in the SRC Network



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# Table of Contents

|                  |  |           |
|------------------|--|-----------|
|                  | About the Documentation . . . . .  | ix        |
|                  | Documentation and Release Notes . . . . .  | ix        |
|                  | Documentation Conventions . . . . .  | ix        |
|                  | Documentation Conventions . . . . .  | x         |
|                  | Documentation Feedback . . . . .   | xii       |
|                  | Requesting Technical Support . . . . .   | xiii      |
|                  | Self-Help Online Tools and Resources . . . . .   | xiii      |
|                  | Opening a Case with JTAC . . . . .   | xiii      |
| <b>Part 1</b>    | <b>Overview</b>  |           |
| <b>Chapter 1</b> | <b>Overview of Scripting Based Third-Party Network Device Integration . . . . .</b>              | <b>3</b>  |
|                  | Integrating Network Devices into the SRC Network Overview . . . . .                              | 3         |
|                  | SAE Communities . . . . .  | 3         |
|                  | Storing Session Data . . . . .   | 4         |
|                  | Using Script Services to Provision Third-Party Devices . . . . .                                 | 4         |
|                  | Logging In Subscribers and Creating Sessions . . . . .   | 5         |
|                  | Assigned IP Subscribers . . . . .  | 5         |
|                  | Login Interactions with Assigned IP Subscribers . . . . .  | 5         |
|                  | Event Notification from an IP Address Manager . . . . .  | 6         |
|                  | Login with Event Notification . . . . .  | 7         |
| <b>Part 2</b>    | <b>Configuration</b>   |           |
| <b>Chapter 2</b> | <b>Configuration Overview . . . . .</b>  | <b>11</b> |
|                  | Configuration Tasks for Integrating Third-Party Network Devices (SRC CLI) . . . . .              | 11        |
|                  | Configuration Tasks for Integrating Third-Party Network Devices (C-Web Interface) . . . . .      | 12        |
| <b>Chapter 3</b> | <b>Configuration Tasks for Integrating Scripting Based Third-Party Network Devices . . . . .</b> | <b>15</b> |
|                  | Setting Up Script Services . . . . .   | 15        |
|                  | Adding Objects for Network Devices (SRC CLI) . . . . .   | 16        |
|                  | Adding Virtual Router Objects (SRC CLI) . . . . .  | 17        |
|                  | Adding Objects for Network Devices (C-Web Interface) . . . . .                                   | 19        |
|                  | Adding a Router Object . . . . .   | 19        |
|                  | Adding Virtual Router Objects . . . . .  | 19        |
|                  | Setting Up SAE Communities (SRC CLI) . . . . .   | 20        |
|                  | Configuring the SAE Community Manager . . . . .  | 20        |
|                  | Specifying the Community Manager in the SAE Device Driver . . . . .                              | 21        |

|                  |   |           |
|------------------|---|-----------|
|                  | Setting Up SAE Communities (C-Web Interface) . . . . .  | 22        |
|                  | Configuring the SAE Community Manager . . . . .   | 22        |
|                  | Specifying the Community Manager in the SAE Device Driver . . . . .                                 | 22        |
|                  | Configuring SAE Properties for the Event Notification API (SRC CLI) . . . . .                       | 23        |
|                  | Configuring SAE Properties for the Event Notification API (C-Web Interface) . . . . .               | 24        |
|                  | Developing Router Initialization Scripts for Network Devices and Juniper Networks                   |           |
|                  | Routers . . . . .   | 24        |
|                  | Interface Object Fields . . . . .   | 25        |
|                  | Required Methods . . . . .  | 26        |
|                  | Example: Router Initialization Script . . . . .   | 27        |
|                  | Copying Initialization Scripts to the C Series Controller . . . . .                                 | 27        |
|                  | Specifying Initialization Scripts on the SAE (SRC CLI) . . . . .                                    | 28        |
|                  | Specifying Initialization Scripts on the SAE (C-Web Interface) . . . . .                            | 29        |
|                  | Using SNMP to Retrieve Information from Network Devices . . . . .                                   | 29        |
|                  | Configuring Global SNMP Communities in the SRC Software (SRC CLI) . . . . .                         | 30        |
|                  | Configuring Global SNMP Communities in the SRC Software (C-Web<br>Interface) . . . . .              | 31        |
|                  | Using the NIC Resolver in Environments That Have Third-Party Devices (SRC<br>CLI) . . . . .         | 31        |
|                  | Using the NIC Resolver in Environments That Have Third-Party Devices (C-Web<br>Interface) . . . . . | 31        |
| <b>Part 3</b>    | <b>Administration</b>   |           |
| <b>Chapter 4</b> | <b>Monitoring Third-Party Network Devices with Scripting Service . . . . .</b>                      | <b>35</b> |
|                  | Viewing Information About SAE Device Drivers (SRC CLI) . . . . .                                    | 35        |
|                  | Viewing Information About Device Drivers (C-Web Interface) . . . . .                                | 37        |
|                  | Viewing SNMP Information for Routers and Devices (SRC CLI) . . . . .                                | 38        |
|                  | Viewing Statistics for Device Drivers (SRC CLI) . . . . .   | 38        |
|                  | Viewing SNMP Statistics for Devices (C-Web Interface) . . . . .                                     | 39        |
|                  | Viewing Statistics for Specific Device Drivers (SRC CLI) . . . . .                                  | 40        |
|                  | Viewing SNMP Statistics for Specific Devices (C-Web Interface) . . . . .                            | 42        |
| <b>Part 4</b>    | <b>Troubleshooting</b>  |           |
| <b>Chapter 5</b> | <b>Troubleshooting Procedures . . . . .</b>   | <b>47</b> |
|                  | Collecting Data with the Activity Monitor (SRC CLI) . . . . .                                       | 47        |
|                  | Collecting Data with the Activity Monitor (C-Web Interface) . . . . .                               | 48        |

# List of Figures

|                  |   |
|------------------|---|
| <b>Part 1</b>    | <b>Overview</b>   |
| <b>Chapter 1</b> | <b>Overview of Scripting Based Third-Party Network Device Integration . . . . . 3</b>                     |
|                  | Figure 1: SAE Community . . . . . 3   |
|                  | Figure 2: Login Interactions with Assigned IP Subscribers . . . . . 6                                     |
|                  | Figure 3: Login Interactions with Event Notification Application . . . . . 7                              |
| <b>Part 3</b>    | <b>Administration</b>   |
| <b>Chapter 4</b> | <b>Monitoring Third-Party Network Devices with Scripting Service . . . . . 35</b>                         |
|                  | Figure 4: C-Web Interface for Monitoring SAE Device Drivers . . . . . 37                                  |
|                  | Figure 5: C-Web Interface for Monitoring SNMP Statistics of Device Drivers . . . . 40                     |
|                  | Figure 6: C-Web Interface for Monitoring SNMP Statistics of a Specific Device<br>Driver Type . . . . . 42 |



# List of Tables

|                  |  |           |
|------------------|--|-----------|
|                  | <b>About the Documentation</b> .....   | <b>ix</b> |
|                  | Table 1: Notice Icons .....  | x         |
|                  | Table 2: Notice Icons .....  | xi        |
|                  | Table 3: Text Conventions .....  | xi        |
| <b>Part 2</b>    | <b>Configuration</b>   |           |
| <b>Chapter 3</b> | <b>Configuration Tasks for Integrating Scripting Based Third-Party Network Devices</b> ..... | <b>15</b> |
|                  | Table 4: Router Initialization Scripts .....   | 25        |
|                  | Table 5: Exported Fields .....   | 25        |





# About the Documentation

- Documentation and Release Notes on page ix
- Documentation Conventions on page ix
- Documentation Feedback on page xii
- Requesting Technical Support on page xiii

## Documentation and Release Notes

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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/>.

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## Documentation Conventions

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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   |
|----------------------------|--|--|
| <b>Bold text like this</b> | <ul style="list-style-type: none"> <li>Represents keywords, scripts, and tools in text.</li> <li>Represents a GUI element that the user selects, clicks, checks, or clears.</li> </ul> | <ul style="list-style-type: none"> <li>Specify the keyword <b>exp-msg</b>.</li> <li>Run the <b>install.sh</b> script.</li> <li>Use the <b>pkgadd</b> tool.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul> |
| <b>Bold text like this</b> | Represents text that the user must type.   | <b>user@host# set cache-entry-age</b><br><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>  |

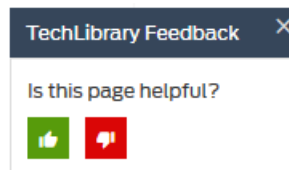
Table 3: Text Conventions (continued)

|                                       |   |   |
|---------------------------------------|---|---|
| <b>Regular sans serif typeface</b>    | <ul style="list-style-type: none"> <li>Represents configuration statements.</li> <li>Indicates SRC CLI commands and options in text.</li> <li>Represents examples in procedures.</li> <li>Represents URLs.</li> </ul>               | <ul style="list-style-type: none"> <li><code>system ldap server{ stand-alone;</code></li> <li>Use the <code>request sae modify device failover command</code> with the <code>force</code> option</li> <li><code>user@host# ...</code></li> <li><a href="https://www.juniper.net/techpubs/software/management/sdx/api-index.html">https://www.juniper.net/techpubs/software/management/sdx/api-index.html</a></li> </ul> |
| <b>Italic sans serif typeface</b>     | 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>&lt;gwif&gt;</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.   |
| <b>Italic typeface</b>                | <ul style="list-style-type: none"> <li>Emphasizes words.</li> <li>Identifies book names.</li> <li>Identifies distinguished names.</li> <li>Identifies files, directories, and paths in text but not in command examples.</li> </ul> | <ul style="list-style-type: none"> <li>There are two levels of access: <i>user</i> and <i>privileged</i>.</li> <li><i>SRC-PE Getting Started Guide</i>.</li> <li><i>o=Users, o=UMC</i></li> <li>The <code>/etc/default.properties</code> file.</li> </ul>   |
| 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.)   | diagnostic   line   |

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- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

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- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
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- 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/>
- Open a case online in the CSC Case Management tool: <https://www.juniper.net/cm/>

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

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

## PART 1

# Overview

- [Overview of Scripting Based Third-Party Network Device Integration on page 3](#)





## CHAPTER 1

# Overview of Scripting Based Third-Party Network Device Integration

- [Integrating Network Devices into the SRC Network Overview](#) on page 3
- [Logging In Subscribers and Creating Sessions](#) on page 5

## Integrating Network Devices into the SRC Network Overview

---

You can integrate third-party routers and other network devices into your SRC network. The SAE provides a driver that you can use to integrate the SAE with a third-party device. This device driver uses the session store to store and replicate subscriber and service session data within a community of SAEs.

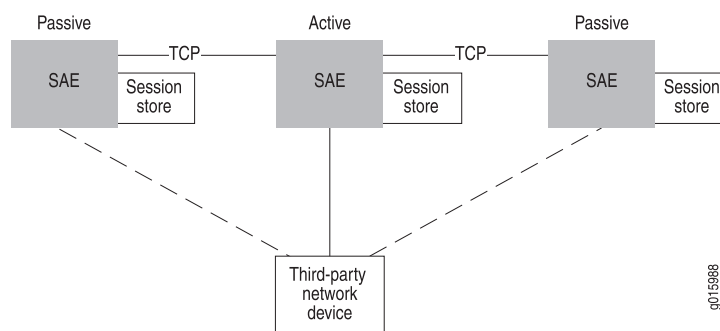
To log in subscribers to the SAE, you use assigned IP subscribers or event notification from an IP address manager.

To activate services and provision policies on the device, you use script services. You can also activate aggregate services for subscribers. However, you cannot activate normal services that require policies to be provisioned on the device.

## SAE Communities

For SAE redundancy in an SRC network, you can have a community of two or more SAEs. SAEs in a community are given the role of either active SAE or passive SAE. The active SAE manages the connection to the network device and keeps session data up to date within the community. [Figure 1 on page 3](#) shows a typical SAE community.

*Figure 1: SAE Community*



When an SAE starts, it negotiates with other SAEs to determine which SAE controls the network device. The SAE community manager and members of the community select the active SAE.

A passive SAE needs to take over as active SAE in any of the following cases:

- The active SAE shuts down. In this case, the active SAE notifies the passive SAEs, and one of the passive SAEs takes over as active SAE.
- A passive SAE does not receive a keepalive message from the active SAE within the keepalive interval. In this case, the passive SAE attempts to become the active SAE.

## Storing Session Data

To aid in recovering from an SAE failover, the SAE stores subscriber and service session data. When the SAE manages a network device, session data is stored in the SAE host's file system. The SRC component that controls the storage of session data on the SAE is called the session store. The session store queues data and then writes the data to session store files on the SAE host's disk. Once the data is written to disk, it can survive a server reboot.

For more information, see *Storing Subscriber and Service Session Data*.

## Using Script Services to Provision Third-Party Devices

You use script services to activate services and provision policies on third-party network devices. A script service is a service into which you can insert or reference a script. You write a script that will activate services and provision policies on the third-party device, and then you insert the script into the script service or reference the script in the service. When the SAE activates a service, it runs the script. The script provisions policies on the device using a means that the device supports. You can also include an interface in the script that causes the SAE to send authentication and tracking events when it activates, modifies, or deactivates a script service session.

The SAE core API includes two interfaces for creating a script:

- `ScriptService`—Defines a service provider interface (SPI) that the script service must implement. The implementation of the `ScriptService` interface activates, modifies, or deactivates the service.
- `ServiceSessionInfo`—Provides a callback interface into the SAE and provides information about the service session to the script service.

For information about the `ScriptService` interface and the `ServiceSessionInfo` interface, see the script service documentation in the SAE core API documentation on the Juniper Networks website at

<https://www.juniper.net/documentation/software/management/src/api-index.html>

You can write the script in Java or Jython.

### Related Documentation

- [Logging In Subscribers and Creating Sessions on page 5](#)
- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)

- [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)
- [Setting Up SAE Communities \(C-Web Interface\) on page 22](#)
- *Configuring the SAE Community Manager*

## Logging In Subscribers and Creating Sessions

---

You can use two mechanisms to obtain subscriber address requests and other information and to set up a pseudointerface on the network device. (You must choose one mechanism; you cannot mix them.)

1. Assigned IP subscriber. The SAE learns about a subscriber through subscriber-initiated activities, such as activating a service through the portal or through the SRC Web Services Gateway).

With this method, you use the assigned IP subscriber login type along with the network interface collector (NIC) to map IP addresses to the SAE.

2. Event notification from an IP address manager. The SAE learns about subscribers through notifications from an external IP address manager, such as a DHCP server or a RADIUS server.

With this method, you use the event notification application programming interface (API). The API provides an interface to the IP address manager, and lets the IP address manager notify the SAE of events such as IP address assignments.

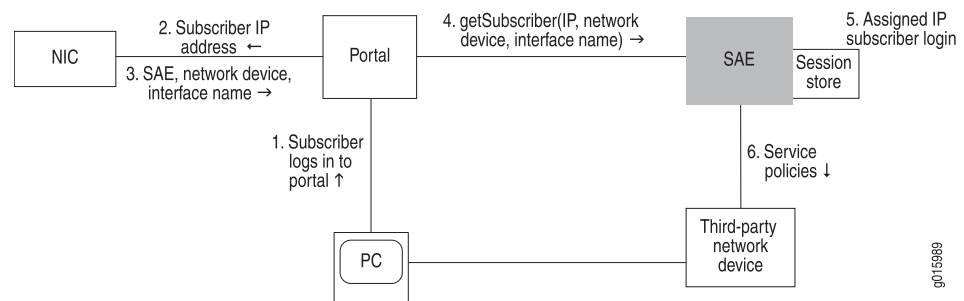
### Assigned IP Subscribers

With the assigned IP subscriber method of logging in subscribers and creating sessions, the SRC module uses IP address pools along with network information collector (NIC) resolvers to provide mapping of IP addresses to SAEs. You configure the static address pools or dynamically discovered address pools in the virtual router configuration for a network device. These pools are published in the NIC. The NIC maps subscriber IP addresses in requests received through the portal or SRC Web Services Gateway to the SAE that currently manages that network device.

### Login Interactions with Assigned IP Subscribers

This section describes login interactions for assigned IP subscribers. In the example shown in [Figure 2 on page 6](#), the subscriber activates a service through a portal. You could also have the subscriber activate a service through the SRC Web Services Gateway.

Figure 2: Login Interactions with Assigned IP Subscribers



The sequence of events for logging in and creating sessions for assigned IP subscribers is:

1. The subscriber logs in to the portal.
2. The portal sends the subscriber's IP address to the NIC.
3. Based on the IP address, the NIC looks up the subscriber's SAE, network device, and interface name, and returns this information to the portal.
4. The portal sends a get Subscriber message to the SAE. The message includes the subscriber's IP address, network device, and interface name.
5. The SAE creates an assigned IP subscriber and performs a subscriber login. Specifically, it:
  - a. Runs the subscriber classification script with the IP address of the subscriber. (Use the ASSIGNEDIP login type in subscriber classification scripts.)
  - b. Loads the subscriber profile.
  - c. Runs the subscriber authorization plug-ins.
  - d. Runs the subscriber tracking plug-ins.
  - e. Creates a subscriber session and stores the session data in the session store file.
6. The SAE pushes service policies for the subscriber session to the network device.

Because the SAE is not notified when the subscriber logs out, the assigned IP idle timer begins when no service is active. The SAE removes the interface subscriber session when the timeout period ends.

## Event Notification from an IP Address Manager

With the event notification method of logging in subscribers and creating subscriber sessions, the subscriber logs in to the network device and obtains an IP address through an address server, usually a DHCP server. The SAE receives notifications about the subscriber, such as the subscriber's IP address, from an event notification application that is installed on the DHCP server.

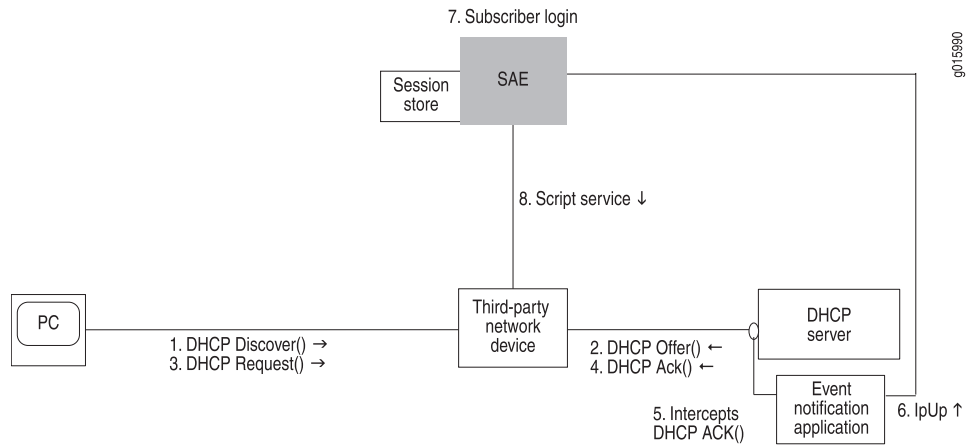
To use this method of logging in subscribers, you can use the event notification API to create the application that notifies the SAE when events occur between the DHCP server and the network device. You can also use Monitoring Agent, a sample application that

was created with the event notification API and that monitors DHCP or RADIUS messages for DHCP or RADIUS servers. See the *SRC PE Sample Applications Guide*.

## Login with Event Notification

This section describes login interactions by means of event notifications.

**Figure 3: Login Interactions with Event Notification Application**



The sequence of events for logging in subscribers and creating sessions is:

1. The DHCP client in the subscriber's computer sends a DHCP discover request to the DHCP server.
2. The DHCP server sends a DHCP offer to the subscriber's DHCP client.
3. The DHCP client sends a DHCP request to the DHCP server.
4. The DHCP server acknowledges the request by sending a DHCP Ack message to the DHCP client.
5. The event notification application that is running on the DHCP server intercepts the DHCP Ack message.
6. The event notification application sends an ipUp message to the SAE that notifies the SAE that an IP address is up.
7. The SAE performs a subscriber login. Specifically, it:
  - a. Runs the subscriber classification script.
  - b. Loads the subscriber profile.
  - c. Runs the subscriber authorization plug-ins.
  - d. Runs the subscriber tracking plug-ins.
  - e. Creates a subscriber session and stores the session in the session store file.
8. The SAE can start script services.

The ipUp event should be sent with a timeout set to the DHCP lease time. The event notification application or the Monitoring Agent that monitors DHCP traffic sends an

ipUp event for each Ack message sent from the DHCP server to the client. The SAE restarts the timeout each time it receives an ipUp event.

If the client explicitly releases the DHCP address (that is, it sends a DHCP release event), the event notification application or the Monitoring Agent that monitors DHCP traffic sends an ipDown event. If the client does not renew the address, the lease expires on the DHCP server and the timeout expires on the SAE.



**NOTE:** To prefer the second user session for an existing address upon receiving an ipUp event if the first and second sessions have different session IDs, set the `prefer-second-user-session` option under the `[edit shared sae configuration driver third-party]` hierarchy.

---

**Related  
Documentation**

- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Using the NIC Resolver in Environments That Have Third-Party Devices \(C-Web Interface\) on page 31](#)
- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Configuring SAE Properties for the Event Notification API \(SRC CLI\) on page 23](#)
- [Adding Objects for Network Devices \(SRC CLI\) on page 16](#)
- [Setting Up Script Services on page 15](#)

## PART 2

# Configuration

- [Configuration Overview on page 11](#)
- [Configuration Tasks for Integrating Scripting Based Third-Party Network Devices on page 15](#)





## CHAPTER 2

# Configuration Overview

- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Configuration Tasks for Integrating Third-Party Network Devices \(C-Web Interface\) on page 12](#)

## Configuration Tasks for Integrating Third-Party Network Devices (SRC CLI)

To integrate third-party devices into your SRC network, complete the following tasks:

- Write a script and add a script service that references the script.  
[See “Setting Up Script Services” on page 15.](#)
- Add objects for the devices.  
[See “Adding Objects for Network Devices \(SRC CLI\)” on page 16.](#)
- Configure an SAE community.  
[See “Setting Up SAE Communities \(SRC CLI\)” on page 20.](#)
- (Optional) Configure SAE properties for the Event Notification API if you are using the event notification method to log in subscribers.  
[See “Configuring SAE Properties for the Event Notification API \(SRC CLI\)” on page 23.](#)
- (Optional) Specify whether to prefer the second user session for an existing IP address upon receiving an ipUp event if the first and second sessions have different session IDs. If set, the first user session is terminated.

```
[edit shared sae configuration driver third-party]  
user@host# set prefer-second-user-session
```

- Configure the session store.  
[See \*Storing Subscriber and Service Session Data.\*](#)
- If you are using the event notification method to log in subscribers, integrate the SAE with an IP address manager. There are two ways to do so:
  - Use the event notification API to create an application that notifies the SAE when events occur between the DHCP server and the network device.

See the event notification API documentation in the SAE CORBA remote API documentation on the Juniper Networks website at <https://www.juniper.net/documentation/software/management/src/api-index.html>.

- Use Monitoring Agent, a sample application that was created with the event notification API and that monitors DHCP or RADIUS messages for DHCP or RADIUS servers.

See the *SRC PE Sample Applications Guide*.

**Related Documentation**

- [Configuration Tasks for Integrating Third-Party Network Devices \(C-Web Interface\) on page 12](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Logging In Subscribers and Creating Sessions on page 5](#)

---

## Configuration Tasks for Integrating Third-Party Network Devices (C-Web Interface)

---

To integrate third-party devices into your SRC network, complete the following tasks:

- Write a script and add a script service that references the script.
- Add objects for the devices.

See “[Adding Objects for Network Devices \(C-Web Interface\)](#)” on page 19.

- Configure an SAE community.

See “[Setting Up SAE Communities \(C-Web Interface\)](#)” on page 22.

- (Optional) Configure SAE properties for the event notification API if you are using the event notification method to log in subscribers.

See “[Configuring SAE Properties for the Event Notification API \(C-Web Interface\)](#)” on page 24.

- Configure the session store.

See *Storing Subscriber and Service Session Data*.

- If you are using the event notification method to log in subscribers, integrate the SAE with an IP address manager. There are two ways to do so:

- Use the event notification API to create an application that notifies the SAE when events occur between the DHCP server and the network device.

See the event notification API documentation in the SAE CORBA remote API documentation on the Juniper Networks website at

<https://www.juniper.net/documentation/software/management/src/api-index.html>

- Use Monitoring Agent, an application that was created with the event notification API and that monitors DHCP or RADIUS messages for DHCP or RADIUS servers.

See the *SRC Sample Applications Guide*.

**Related  
Documentation**

- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Using the NIC Resolver in Environments That Have Third-Party Devices \(C-Web Interface\) on page 31](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)



## CHAPTER 3

# Configuration Tasks for Integrating Scripting Based Third-Party Network Devices

- [Setting Up Script Services on page 15](#)
- [Adding Objects for Network Devices \(SRC CLI\) on page 16](#)
- [Adding Virtual Router Objects \(SRC CLI\) on page 17](#)
- [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)
- [Setting Up SAE Communities \(SRC CLI\) on page 20](#)
- [Setting Up SAE Communities \(C-Web Interface\) on page 22](#)
- [Configuring SAE Properties for the Event Notification API \(SRC CLI\) on page 23](#)
- [Configuring SAE Properties for the Event Notification API \(C-Web Interface\) on page 24](#)
- [Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers on page 24](#)
- [Copying Initialization Scripts to the C Series Controller on page 27](#)
- [Specifying Initialization Scripts on the SAE \(SRC CLI\) on page 28](#)
- [Specifying Initialization Scripts on the SAE \(C-Web Interface\) on page 29](#)
- [Using SNMP to Retrieve Information from Network Devices on page 29](#)
- [Configuring Global SNMP Communities in the SRC Software \(SRC CLI\) on page 30](#)
- [Configuring Global SNMP Communities in the SRC Software \(C-Web Interface\) on page 31](#)
- [Using the NIC Resolver in Environments That Have Third-Party Devices \(SRC CLI\) on page 31](#)
- [Using the NIC Resolver in Environments That Have Third-Party Devices \(C-Web Interface\) on page 31](#)

## Setting Up Script Services

---

To set up script services:

1. Write a script that implements the ScriptService interface, a service provider interface (SPI) for the SAE.

See *Customizing Service Implementations*.

See the script service documentation in the SAE core API documentation on the Juniper Networks website at

<https://www.juniper.net/documentation/software/management/src/api-index.html>

2. Add a script service that references the script.

See *SRC Script Services Overview*.

#### Related Documentation

- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Copying Initialization Scripts to the C Series Controller on page 27](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Logging In Subscribers and Creating Sessions on page 5](#)
- [Setting Up SAE Communities \(C-Web Interface\) on page 22](#)

## Adding Objects for Network Devices (SRC CLI)

For each network device that the SAE manages, add a router object and virtual router object.

Use the following configuration statements to add a router object:

```
shared network device name {
  description description;
  management-address management-address;
  device-type (junose| junos| pcmm| third-party);
  qos-profile [qos-profile...];
}
```

To add a router object:

1. From configuration mode, access the statements that configure network devices. This sample procedure uses `proxy_device` as the name of the router.

```
user@host# edit shared network device proxy_device
```

2. (Optional) Add a description for the router object.

```
[edit shared network device proxy_device]
user@host# set description description
```

3. (Optional) Add the IP address of the router object.

```
[edit shared network device proxy_device]
user@host# set management-address management-address
```

4. Set the type of device that you are adding to third-party.

```
[edit shared network device proxy_device]
user@host# set device-type third-party
```

5. (Optional) Verify your configuration.

```
[edit shared network device proxy_device]
user@host# show
description "Third-party router";
management-address 192.168.9.25;
device-type third-party;
interface-classifier {
  rule rule-0 {
    script #;
  }
}
```

#### Related Documentation

- [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)
- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Adding Virtual Router Objects \(SRC CLI\) on page 17](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Logging In Subscribers and Creating Sessions on page 5](#)

## Adding Virtual Router Objects (SRC CLI)

Use the following configuration statements to add a virtual router:

```
shared network device name virtual-router name {
  sae-connection [sae-connection ...];
  snmp-read-community snmp-read-community;
  snmp-write-community snmp-write-community;
  scope [scope...];
  tracking-plug-in [tracking-plug-in...];
}
```

To add a virtual router:

1. From configuration mode, access the statements for virtual routers. This sample procedure uses `proxy_device` as the name of the router object. For third-party devices, use the name `default` for the virtual router.

```
user@host# edit shared network device proxy_device virtual-router default
```

2. Specify the addresses of SAEs that can manage this router. This step is required for the SAE to work with the router.

```
[edit shared network device proxy_device virtual-router default]
user@host# set sae-connection [ sae-connection ...]
```

To specify the active SAE and the redundant SAE, enter an exclamation point (!) after the hostname or IP address of the connected SAE. For example:

```
[edit shared network device proxy_device virtual-router default]
user@host# set sae-connection [sae1! sae2!]
```

3. (Optional) Specify an SNMP community name for SNMP read-only operations for this virtual router.

```
[edit shared network device proxy_device virtual-router default]
user@host# set snmp-read-community snmp-read-community
```

4. (Optional) Specify an SNMP community name for SNMP write operations for this virtual router.

```
[edit shared network device proxy_device virtual-router default]
user@host# set snmp-write-community snmp-write-community
```

5. (Optional) Specify service scopes assigned to this virtual router. The scopes are available for subscribers connected to this virtual router for selecting customized versions of services.

```
[edit shared network device proxy_device virtual-router default]
user@host# set scope [ scope ...]
```

6. (Optional) Specify the plug-ins that track interfaces that the SAE manages on this virtual router.

```
[edit shared network device proxy_device virtual-router default]
user@host# set tracking-plug-in [ tracking-plug-in ...]
```

7. (Optional) Verify your configuration.

```
[edit shared network device proxy_device virtual-router default]
user@host# show
sae-connection 10.8.221.45;
snmp-read-community *****;
snmp-write-community *****;
```



```
scope POP-Toronto;
tracking-plugin flexRadius;
```

#### Related Documentation

- [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)
- [Adding Objects for Network Devices \(SRC CLI\) on page 16](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)

## Adding Objects for Network Devices (C-Web Interface)

For each network device that the SAE manages, add a router object and virtual router object.

- [Adding a Router Object on page 19](#)
- [Adding Virtual Router Objects on page 19](#)

### Adding a Router Object

To add a router object:

1. Click **Configure**, expand **Shared**, and then click **Network**.  
The Shared Network pane appears.
2. From the Create new list, select **Device**.
3. Type a name for the new device in the dialog box, and click **OK**.  
The Device pane appears.
4. Enter information as described in the Help text in the main pane, and click **Apply**.

### Adding Virtual Router Objects

To add a virtual router to an existing router object:

1. Click **Configure**, expand **Shared**>**Network**, and then click an existing device.  
The Device pane appears.
2. From the Create new list, select **Virtual Router**.
3. Type a name for the new device in the dialog box, and click **OK**.  
The Virtual Router pane appears.
4. Click **Create**, enter information as described in the Help text in the main pane, and then click **Apply**.

#### Related Documentation

- [Using the NIC Resolver in Environments That Have Third-Party Devices \(C-Web Interface\) on page 31](#)

- [Configuration Tasks for Integrating Third-Party Network Devices \(C-Web Interface\) on page 12](#)
- [Adding Objects for Network Devices \(SRC CLI\) on page 16](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)

## Setting Up SAE Communities (SRC CLI)

Tasks to configure SAE communities are:



**NOTE:** If there is a firewall in the network, configure the firewall to allow SAE messages through.

1. [Configuring the SAE Community Manager on page 20](#)
2. [Specifying the Community Manager in the SAE Device Driver on page 21](#)

### Configuring the SAE Community Manager

Use the following configuration statements to configure the SAE community manager that manages third-party network device communities:

```
shared sae configuration external-interface-features name CommunityManager {
  keepalive-interval keepalive-interval ;
  threads threads ;
  acquire-timeout acquire-timeout ;
  blackout-time blackout-time ;
}
```

To configure the community manager:

1. From configuration mode, access the configuration statements for the community manager. In this sample procedure, `sae_mgr` is the name of the community manager.

```
user@host# edit shared sae configuration external-interface-features sae_mgr
CommunityManager
```

2. Specify the interval between keepalive messages sent from the active SAE to the passive members of the community.

```
[edit shared sae configuration external-interface-features sae_mgr CommunityManager]
user@host# set keepalive-interval keepalive-interval
```

3. Specify the number of threads that are allocated to manage the community. You generally do not need to change this value.

```
[edit shared sae configuration external-interface-features sae_mgr CommunityManager]
```

```
user@host# set threads threads
```

- Specify the amount of time an SAE waits for a remote member of the community when it is acquiring a distributed lock. You generally do not need to change this value.

```
[edit shared sae configuration external-interface-features sae_mgr CommunityManager]
user@host# set acquire-timeout acquire-timeout
```

- Specify the amount of time that an active SAE must wait after it shuts down before it can try to become the active SAE of the community again.

```
[edit shared sae configuration external-interface-features sae_mgr CommunityManager]
user@host# set blackout-time blackout-time
```

- (Optional) Verify the configuration of the SAE community manager.

```
[edit shared sae configuration external-interface-features sae_mgr
CommunityManager]
user@host# show
CommunityManager {
  keepalive-interval 30;
  threads 5;
  acquire-timeout 15;
  blackout-time 30;
}
```

## Specifying the Community Manager in the SAE Device Driver

Use the following configuration statements to specify the community manager in the SAE device driver.

```
shared sae configuration driver third-party {
  sae-community-manager sae-community-manager ;
  prefer-second-user-session ;
}
```

To specify the community manager:

- From configuration mode, access the configuration statements for the third-party device driver.

```
user@host# edit shared sae configuration driver third-party
```

- Specify the name of the community manager.

```
[edit shared sae configuration driver third-party]
user@host# set sae-community-manager sae-community-manager
```

3. (Optional) Verify the configuration of the third-party device driver.

```
[edit shared sae configuration driver third-party]
user@host# show
sae-community-manager sae_mgr;
```

**Related Documentation**

- [Setting Up SAE Communities \(C-Web Interface\) on page 22](#)
- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Configuring the SAE Community Manager](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Logging In Subscribers and Creating Sessions on page 5](#)

## Setting Up SAE Communities (C-Web Interface)

---

Tasks to configure SAE communities are:

- [Configuring the SAE Community Manager on page 22](#)
- [Specifying the Community Manager in the SAE Device Driver on page 22](#)

### Configuring the SAE Community Manager

To configure the SAE community manager that manages third-party device communities:

1. Click **Configure**, expand **Shared>SAE**, and then click the SAE group for which you want to manage third-party devices.

The Group pane appears.

2. In the side pane, expand **Configuration>External Interface Features: PCMMCommunityManager**, and then click **Community Manager**.

The Community Manager pane appears.

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

### Specifying the Community Manager in the SAE Device Driver

To specify the community manager in the SAE device driver:

1. Click **Configure**, expand **Shared>SAE>Configuration>Driver**, and then click **Third Party**.

The Third Party pane appears.

2. Click **Create**, enter information as described in the Help text in the main pane, and then click **Apply**.

**Related Documentation**

- [Setting Up SAE Communities \(SRC CLI\) on page 20](#)

- [Setting Up Script Services on page 15](#)
- [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)

## Configuring SAE Properties for the Event Notification API (SRC CLI)

Use the following configuration statements to configure properties for the Event Notification API:

```
shared sae configuration external-interface-features name EventAPI {
  retry-time retry-time ;
  retry-limit retry-limit ;
  threads threads ;
}
```

To configure properties for the Event Notification API:

1. From configuration mode, access the configuration statements for the Event Notification API. In this sample procedure, `west-region` is the name of the SAE group, and `event_api` is the name of the Event API configuration.

```
user@host# edit shared sae group west-region configuration
external-interface-features event_api EventAPI
```

2. Specify the amount of time between attempts to send events that could not be delivered.

```
[edit shared sae group west-region configuration external-interface-features event_api
EventAPI]
user@host# set retry-time retry-time
```

3. Specify the number of times an event fails to be delivered before the event is discarded.

```
[edit shared sae group west-region configuration external-interface-features event_api
EventAPI]
user@host# set retry-limit retry-limit
```

4. Specify the number of threads allocated to process events.

```
[edit shared sae group west-region configuration external-interface-features event_api
EventAPI]
user@host# set threads threads
```

5. (Optional) Verify the configuration of the Event Notification API properties.

```
[edit shared sae group west-region configuration external-interface-features
event_api EventAPI]
user@host# show
EventAPI {
  retry-time 300;
  retry-limit 5;
  threads 5;
}
```

- Related Documentation**
- [Using the SAE in a PCMM Environment](#)
  - [Configuring SAE Properties for the Event Notification API \(C-Web Interface\) on page 24](#)
  - [Initially Configuring the SAE](#)
  - [Configuring the SAE to Manage PCMM Devices \(SRC CLI\)](#)

## Configuring SAE Properties for the Event Notification API (C-Web Interface)

---

To configure properties for the event notification API:

1. Click **Configure**, expand **Shared>SAE**, and then expand the SAE group for which you want to manage devices.
2. In the side pane, expand **Configuration>External Interface Features: event**, and then click **Event API**.  
  
The Event API pane appears.
3. Enter information as described in the Help text in the main pane, and click **Apply**.

- Related Documentation**
- [Configuring an SAE Group](#)
  - [Configuring SAE Properties for the Event Notification API \(SRC CLI\) on page 23](#)

## Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers

---

When the SAE establishes a connection with a router or network device, it can run an initialization script to customize the setup of the connection. These initialization scripts are run when the connection between a router or network device and the SAE is established and again when the connection is dropped.

We provide the `IorPublisher` script in the `/opt/UMC/sae/lib` folder. The `IorPublisher` script publishes the interoperable object reference (IOR) of the SAE in the directory so that a NIC can associate a router with an SAE.

For JunosE VRs that supply IP addresses from a local pool, a router initialization script is provided that identifies which VR supplies each IP pool and writes the information to the configuration. The SAE runs the script only when a COPS connection is established to the JunosE router. Consequently, if you modify information about IP pools on a VR after

the COPS connection is established, the SAE will not automatically register the changes, and you must update the configuration.

For Junos (only junos-ise device) virtual routers that supply IP addresses from a local pool, a router initialization script is provided to get the IP pool information from Junos router and update it in LDAP.

Table 4 on page 25 describes the router initialization scripts that we provide with the SRC software in the `/opt/UMC/sae/lib` folder.

**Table 4: Router Initialization Scripts**

| Script Name      | Function   | When to Use Script  |
|------------------|--|---|
| iorPublisher     | Publishes the IOR of the SAE into an internal part of the shared configuration so that a NIC can associate a router with an SAE.                             | Use with JunosE routers that do not supply IP addresses from local pools, and with devices running Junos OS.<br><br>Use with all devices running Junos OS.<br><br>Use with third-party network devices. |
| poolPublisher    | Publishes the IOR of the SAE and local IP address pools in the directory so that a NIC can associate a router with an SAE and resolve the IP-to-SAE mapping. | Use with JunosE virtual routers that supply IP addresses from local pools.  |
| isePoolPublisher | Publishes the local IP address pools in the directory so that a NIC can associate a router with an SAE and resolve the IP-to-SAE mapping.                    | Use with Junos (only junos-ise device) virtual routers that supply IP addresses from local pools.   |

## Interface Object Fields

Router initialization scripts are written in the Python programming language ([www.python.org](http://www.python.org)) and executed in the Jython environment ([www.jython.org](http://www.jython.org)).

Router initialization scripts interact with the SAE through an interface object called Ssp. The SAE exports a number of fields through the interface object to the script and expects the script to provide the entry point to the SAE.

Table 5 on page 25 describes the fields that the SAE exports.

**Table 5: Exported Fields**

| Ssp Attribute  | Description   |
|----------------|---|
| Ssp.properties | System properties object (class: java.util.Properties)—The properties should be treated as read-only by the script. |

Table 5: Exported Fields (continued)

| Ssp Attribute | Description   |
|---------------|---|
| Ssp.errorLog  | Error logger—Use the <code>SsperrorLog.println (message)</code> to send error messages to the log.        |
| Ssp.infoLog   | Info logger—Use the <code>Ssp.infoLog.println (message)</code> to send informational messages to the log. |
| Ssp.debugLog  | Debug logger—Use the <code>Ssp.debugLog.println (message)</code> to send debug messages to the log.       |

The router initialization script must set the field `Ssp.routerInit` to a factory function that instantiates a router initialization object:

- `<VRName>`—Name of the virtual router in which the COPS client has been configured, format: `virtualRouterName@RouterName`
- `<virtualIp>`—Virtual IP address of the SAE (string, dotted decimal; for example: 192.168.254.1)
- `<realIp>`—Real IP address of the SAE (string, dotted decimal; for example, 192.168.1.20)
- `<VRip>`—IP address of the virtual router (string, dotted decimal)
- `<transportVR>`—Name of the virtual router used for routing the COPS connection, or `None`, if the COPS client is directly connected

The factory function must implement the following interface:

```
Ssp.routerInit(VRName,
virtualIp,
realIp,
VRip,
transportVR)
```

The factory function returns an interface object that is used to set up and tear down a connection for a given COPS server. A common case of a factory function is the constructor of a class.

The factory function is called directly after a COPS server connection is established. In case of problems, an exception should be raised that leads to the termination of the COPS connection.

## Required Methods

Instances of the interface object must implement the following methods:

- `setup()`—Is called when the COPS server connection is established and is operational. In case of problems, an exception should be raised that leads to the termination of the COPS connection.
- `shutdown()`—Is called when the COPS server connection to the virtual router is terminated. This method should not raise any exceptions in case of problems.



## Example: Router Initialization Script

The following script defines a router initialization class named *SillyRouterInit*. The interface class does not implement any useful functionality. The interface class just writes messages to the infoLog when the router connection is created or terminated.

```
class SillyRouterInit:
    def __init__(self, vrName, virtualIp, realIp, vrIp, transportVr):
        """ initialize router initialization object """
        self.vrName = vrName
        Ssp.infoLog.println("SillyRouterInit created")

    def setup(self):
        """ initialize connection to router """
        Ssp.infoLog.println("Setup connection to VR %(vrName)s" %
                            vars(self))

    def shutdown(self):
        """ shutdown connection to router """
        Ssp.infoLog.println("Shutdown connection to VR %(vrName)s" %
                            vars(self))

#
# publish interface object to Ssp core
#
Ssp.routerInit = SillyRouterInit
```

### Related Documentation

- [How SNMP Obtains Information from Routers for the SRC Software](#)
- [Specifying JunosE Router Initialization Scripts on the SAE \(SRC CLI\)](#)
- [Accessing the Router CLI](#)
- [Viewing Statistics for Specific JunosE Device Drivers \(SRC CLI\)](#)
- [Troubleshooting Problems with Managing JunosE Routers](#)
- [Updating Local IP Address Pools for Junos Virtual Routers \(SRC CLI\)](#)
- [Updating Local IP Address Pools for JunosE Virtual Routers \(SRC CLI\)](#)

## Copying Initialization Scripts to the C Series Controller

If you use a script that is not provided with the SRC module, you need to use the **file copy** command to copy your script to the C Series Controller. For example:

```
user@host> file copy ftp://user@myserver/routerinit.py /opt/UMC/sae/lib
Password:
```

**Related  
Documentation**

- [Specifying Initialization Scripts on the SAE \(SRC CLI\) on page 28](#)
- [Setting Up Script Services on page 15](#)
- [Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers on page 24](#)

## Specifying Initialization Scripts on the SAE (SRC CLI)

---

Use the following configuration statements to specify initialization scripts for third-party devices:

```
shared sae configuration driver scripts {  
  extension-path extension-path;  
  general general;  
  third-party third-party;  
}
```

To configure initialization scripts for third-party devices:

1. From configuration mode, access the configuration statements that configure initialization scripts. In this sample procedure, the scripts are configured in the west-region group.

```
user@host# edit shared sae group west-region configuration driver scripts
```

2. Specify the initialization script for third-party devices.

```
[edit shared sae group west-region configuration driver scripts]  
user@host# set third-party third-party
```

SAE runs the specified script when the third-party device driver is activated and again when the driver is deactivated.

3. Specify the initialization script that can be used for all other types of routers supported by the SRC module.

```
[edit shared sae group west-region configuration driver scripts]  
user@host# set general general
```

4. Configure a path to scripts that are not in the default location, `/opt/UMC/sae/lib`.

```
[edit shared sae group west-region configuration driver scripts]  
user@host# set extension-path extension-path
```

5. (Optional) From operational mode, verify your initialization script configuration.

```
[edit shared sae group west-region configuration driver scripts]
user@host# show
third-party iorPublisher;
```

- Related Documentation**
- [Specifying Initialization Scripts on the SAE \(C-Web Interface\) on page 29](#)
  - [Copying Initialization Scripts to the C Series Controller on page 27](#)
  - [Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers on page 24](#)

## Specifying Initialization Scripts on the SAE (C-Web Interface)

---

To configure initialization scripts for third-party devices:

1. Click **Configure**, expand **Shared>SAE>Configuration>Driver**, and then click **Scripts**.  
The Scripts pane appears.
2. Click **Create**, enter information as described in the Help text in the main pane, and then click **Apply**.

- Related Documentation**
- [Specifying Initialization Scripts on the SAE \(SRC CLI\) on page 28](#)
  - [Copying Initialization Scripts to the C Series Controller on page 27](#)
  - [Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers on page 24](#)

## Using SNMP to Retrieve Information from Network Devices

---

You can use SNMP to retrieve information from a network device. For example, if you create a script that uses SNMP, specify the SNMP communities that are on the network device.

To retrieve information:

- (Recommended) Specify SNMP communities for each virtual router object.
- Configure global default SNMP communities.

- Related Documentation**
- [Adding Virtual Router Objects \(SRC CLI\) on page 17](#)
  - [Adding Objects for Network Devices \(C-Web Interface\) on page 19](#)
  - [Configuring Global SNMP Communities in the SRC Software \(SRC CLI\) on page 30](#)
  - [Configuring Global SNMP Communities in the SRC Software \(C-Web Interface\) on page 31](#)

## Configuring Global SNMP Communities in the SRC Software (SRC CLI)

You can configure global default SNMP communities that are used if a VR does not exist on the router or if the community strings have not been configured for the VR.

Use the following configuration statements to configure global default SNMP communities:

```
shared sae configuration driver snmp {  
  read-only-community-string read-only-community-string;  
  read-write-community-string read-write-community-string;  
}
```

To configure global default SNMP communities:

1. From configuration mode, access the statements that configure default SNMP communities.

```
user@host# edit shared sae configuration driver snmp
```

2. Configure the default SNMP community string used for read access to the router.

```
[edit shared sae configuration driver snmp]  
user@host# set read-only-community-string read-only-community-string
```

3. Configure the default SNMP community string used for write access to the router.

```
[edit shared sae configuration driver snmp]  
user@host# set read-write-community-string read-write-community-string
```

4. (Optional) Verify your configuration.

```
[edit shared sae configuration driver snmp]  
user@host# show  
read-only-community-string *****;  
read-write-community-string *****;
```

### Related Documentation

- [Using SNMP to Retrieve Information from JunosE Routers and Devices Running Junos OSs \(SRC CLI\)](#)
- [Configuring Global SNMP Communities in the SRC Software \(C-Web Interface\) on page 31](#)
- [Using SNMP to Retrieve Information from Network Devices on page 29](#)
- [How SNMP Obtains Information from Routers for the SRC Software](#)

## Configuring Global SNMP Communities in the SRC Software (C-Web Interface)

You can configure global default SNMP communities that are used if a VR does not exist on the router or if the community strings have not been configured for the VR.

To configure global default SNMP communities:

1. Click **Configure**, expand **Shared>SAE>Configuration>Driver**, and then click **SNMP**.

The SNMP pane appears.

2. Click **Create**, enter information as described in the Help text in the main pane, and then click **Apply**.

### Related Documentation

- [Configuring Global SNMP Communities in the SRC Software \(SRC CLI\) on page 30](#)

## Using the NIC Resolver in Environments That Have Third-Party Devices (SRC CLI)

If you are using the assigned IP subscriber method of logging in subscribers, and you are using the NIC to determine the subscriber's SAE, you need to configure a resolver on the NIC. The OnePopDynamicIp sample configuration data supports this scenario. The OnePopDynamicIp configuration supports one point of presence (POP) and provides no redundancy. The realm for this configuration accommodates the situation in which IP pools are configured locally on each virtual router object.

You can access the OnePopDynamicIp configuration in the SRC CLI.

### Related Documentation

- [Configuration Tasks for Integrating Third-Party Network Devices \(SRC CLI\) on page 11](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)
- [Configuring the NIC \(SRC CLI\)](#)

## Using the NIC Resolver in Environments That Have Third-Party Devices (C-Web Interface)

If you are using the assigned IP subscriber method of logging in subscribers, and you are using the NIC to determine the subscriber's SAE, you need to configure a resolver on the NIC. The OnePopDynamicIp sample configuration data supports this scenario. The OnePopDynamicIp configuration supports one point of presence (POP) and provides no redundancy. The realm for this configuration accommodates the situation in which IP pools are configured locally on each virtual router object.

You can access the OnePopDynamicIp configuration.

### Related Documentation

- [Locating Subscriber Management Information](#)
- [Integrating Network Devices into the SRC Network Overview on page 3](#)

- [Configuration Tasks for Integrating Third-Party Network Devices \(C-Web Interface\)](#) on page 12

## PART 3

# Administration

- [Monitoring Third-Party Network Devices with Scripting Service on page 35](#)





## CHAPTER 4

# Monitoring Third-Party Network Devices with Scripting Service

- Viewing Information About SAE Device Drivers (SRC CLI) on page 35
- Viewing Information About Device Drivers (C-Web Interface) on page 37
- Viewing SNMP Information for Routers and Devices (SRC CLI) on page 38
- Viewing Statistics for Device Drivers (SRC CLI) on page 38
- Viewing SNMP Statistics for Devices (C-Web Interface) on page 39
- Viewing Statistics for Specific Device Drivers (SRC CLI) on page 40
- Viewing SNMP Statistics for Specific Devices (C-Web Interface) on page 42

### Viewing Information About SAE Device Drivers (SRC CLI)

---

**Purpose** View information about SAE device drivers. Each device driver manages one logical router instance.

**Action** To view information about the state of SAE device drivers:

```
user@host> show sae drivers
```

```
JunosE Driver
Device name           default@dryad
Device type           junose
Device IP             10.227.7.244
Local IP              10.227.7.172
TransportRouter       default@dryad
Device version        7.2.0
Start time            Tue Feb 13 14:18:44 EST 2007
Number of notifications 20
Number of processed added 14
Number of processed changed 0
Number of processed deleted 6
Number of provisioning attempt 30
Number of provisioning attempt failed 0
Number of outstanding decisions 0
Number of SAP         7
Number of PAP         1
Number of active user sessions 100
Number of active service sessions 0
Job Queue
```

```

Size                0
Age (ms)            1
Total enqueued      28
Total dequeued      28
Average job time (ms) 426
State Synchronization
Number recovered subscriber sessions    0
Number recovered service sessions      0
Number recovered interface sessions     0
Number invalid subscriber sessions      0
Number invalid service sessions        0
Number invalid interface sessions       0
Background restoration start time       Tue Feb 13 14:18:49 EST 2007

Background restoration end time         Tue Feb 13 14:18:49 EST 2007

Number subscriber sessions restored in background 0
Number of provisioning objects left to collect    0
Total number of provisioning objects to collect  11
Start time                                       Tue Feb 13 14:18:45 EST 2007

End time                                       Tue Feb 13 14:18:47 EST 2007

Number of synched contexts                 7
Number of post-sync jobs                   6
Session Store Info
Session Store Status                       sessionsCollected
Status Last Update Time                   Mon Jul 29 10:26:26 UTC 2013
Current Usage Ratio                       1.0
Last Modified Time                        Size(KB) Name LiveSessionsSize(KB)
Mon Jul 29 10:27:05 UTC 2013  117.9   storeOps_1_1 117.9

```

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

```
user@host> show sae drivers device-name device-name
```

To view only the virtual router names for the device driver:

```
user@host> show sae drivers brief
```

```

Router Drivers
Router Name      Router Type
default@simJunos  junos

```

To restrict the number of displayed results:

```
user@host> show sae drivers maximum-results maximum-results
```

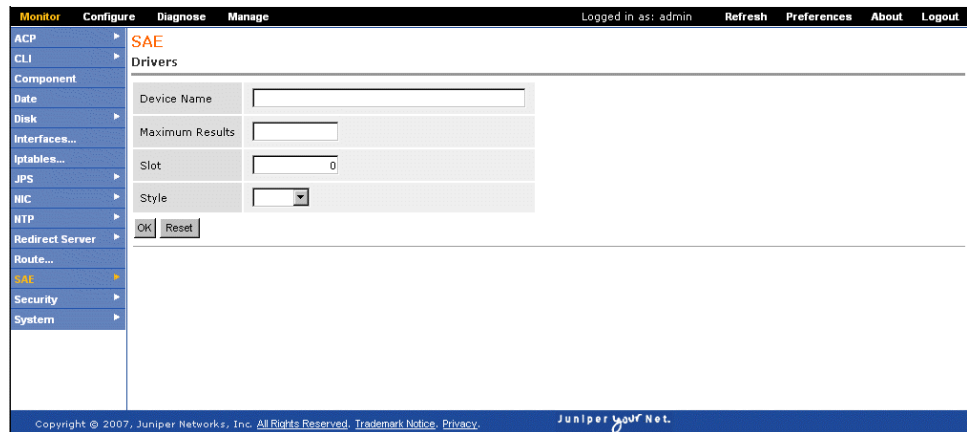
- Related Documentation**
- [Initially Configuring the SAE](#)
  - [Shutting Down the Device Drivers \(SRC CLI\)](#)
  - [Viewing Information About Device Drivers \(C-Web Interface\) on page 37](#)
  - [Viewing Statistics for Device Drivers \(SRC CLI\) on page 38](#)

## Viewing Information About Device Drivers (C-Web Interface)

**Purpose** View information about the device drivers available on the SAE.

- Action**
1. Click **Monitor>SAE >Drivers**.
- The Drivers pane appears.

*Figure 4: C-Web Interface for Monitoring SAE Device Drivers*



2. In the Device Name box, enter a full or partial device driver name for which you want to display information, or leave the box blank to display 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 Maximum Results box, enter the maximum number of results that you want to receive.
4. In the Slot box, enter the number of the slot for which you want to display device information.
5. Select an output style from the Style list.
6. Click **OK**.

The Drivers pane displays the status of the devices running on the SAE.

- Related Documentation**
- [Connections to Managed Devices](#)
  - [Viewing SNMP Information for Routers and Devices \(SRC CLI\) on page 38](#)
  - [Viewing Statistics for Device Drivers \(SRC CLI\) on page 38](#)
  - [Viewing Statistics for Specific Device Drivers \(SRC CLI\) on page 40](#)
  - [Viewing Information About SAE Device Drivers \(SRC CLI\) on page 35](#)

---

## Viewing SNMP Information for Routers and Devices (SRC CLI)

---

**Purpose** View SNMP information for routers and devices that the SAE manages. You can view information for all routers and devices, or for specific ones.

**Action** To view SNMP information for routers and devices that the SAE is managing:

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

To view information for a particular 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 device filter filter
```

To view only the RADIUS clients that were accessible by IP address and port number:

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

- Related Documentation**
- [Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS](#)
  - [Viewing Statistics for Device Drivers \(SRC CLI\) on page 38](#)
  - [Viewing SNMP Information for Licenses on Virtual Routers \(SRC CLI\)](#)
  - [Viewing Statistics for Specific Device Drivers \(SRC CLI\) on page 40](#)

---

## Viewing Statistics for Device Drivers (SRC CLI)

---

**Purpose** View SNMP statistics for all device drivers.

**Action** user@host> show sae statistics device common

```
SNMP Statistics
Driver type           JunosE COPS
Number of close requests 0
Number of connections accepted 0
Number of current connections 0
Number of open requests 0
Server address        0.0.0.0
Server port           3288
Time since last redirect 0
```

```
SNMP Statistics
Driver type           PACKETCABLE COPS
Number of close requests 0
Number of connections accepted 0
Number of current connections 0
Number of open requests 0
Server address        0.0.0.0
Server port           0
Time since last redirect 0
```

```
SNMP Statistics
Driver type           Junos
Number of close requests 0
Number of connections accepted 0
Number of current connections 0
Number of open requests 0
Server address        0.0.0.0
Server port           3333
Time since last redirect 0
```

The value of the server address can be either an IPv4 or IPv6 address, depending on the platform.

**Related Documentation**

- [Shutting Down the Device Drivers \(C-Web Interface\)](#)
- [Viewing Information About SAE Device Drivers \(SRC CLI\) on page 35](#)
- [Viewing SNMP Information for Routers and Devices \(SRC CLI\) on page 38](#)
- [Viewing Statistics for Specific Device Drivers \(SRC CLI\) on page 40](#)

## Viewing SNMP Statistics for Devices (C-Web Interface)

**Purpose** View SNMP statistics about devices.

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

The Statistics/Device pane appears.

*Figure 5: C-Web Interface for Monitoring SNMP Statistics of Device Drivers*

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 all devices.
3. In the Slot box, enter the number of the slot for which you want to display SNMP statistics for devices.
4. Select an output style from the Style list.
5. Click **OK**.

The Statistics/Device pane displays statistics for all devices.

**Related Documentation**

- [Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS](#)
- [Viewing SNMP Statistics for Specific Devices \(C-Web Interface\) on page 42](#)
- [Viewing SNMP Statistics for Subscriber Sessions and Service Sessions \(C-Web Interface\)](#)

## Viewing Statistics for Specific Device Drivers (SRC CLI)

**Purpose** View statistics for specific router drivers or device drivers.

**Action** To view SNMP statistics for device drivers running Junos OS:

```
user@host> show sae statistics device common junos
```

To view SNMP statistics for JunosE router drivers:

```
user@host> show sae statistics device common junose
```

To view SNMP statistics for PCMM device drivers:

```
user@host> show sae statistics device common packetcable-cops
```

To view SNMP statistics for third-party device drivers:

```
user@host> show sae statistics device common proxy
```

To view SNMP statistics for AAA device drivers:

```
user@host> show sae statistics device common aaa
```

To view SNMP statistics for intelligent service edge device drivers:

```
user@host> show sae statistics device common junos-ise
```

To view SNMP statistics for Device Management Interface (DMI) device drivers:

```
user@host> show sae statistics device common junos-dmi
```

To view SNMP statistics for Gx router drivers:

```
user@host> show sae statistics device common junos-gx
```

For example, to view SNMP statistics for device drivers running Junos OS:

```
user@host> show sae statistics device common junos
```

```
SNMP Statistics
Driver type           Junos OS
Number of close requests      0
Number of connections accepted 0
Number of current connections 0
Number of open requests      0
Server address             0.0.0.0
Server port                 3333
Time since last redirect     0
```

**Related  
Documentation**

- [Configuring the Session Store Feature \(SRC CLI\)](#)
- [Viewing Information About SAE Device Drivers \(SRC CLI\) on page 35](#)

- Viewing SNMP Information for Routers and Devices (SRC CLI) on page 38
- Viewing Statistics for Device Drivers (SRC CLI) on page 38

## Viewing SNMP Statistics for Specific Devices (C-Web Interface)

**Purpose** View SNMP statistics about specific devices.

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

The Statistics/Device/Common pane appears.

*Figure 6: C-Web Interface for Monitoring SNMP Statistics of a Specific Device Driver Type*

The screenshot shows the Juniper C-Web Interface with the following configuration options for SAE Statistics / Device / Common:

- Device Name:** A text input field. Description: "Name of a device. Value: All or part of the device name." Choices: "For JUNOSe router drivers, use the format virtualRouterName@routerName. For JUNOS router drivers and PCMM drivers, use the format default@routerName." Default: "No value".
- Slot:** A text input field. Description: "Display SAE information for a specified slot. Value: Currently the chassis has only one slot. The valid value is 0. Default: 0".
- Type:** A dropdown menu. Description: "Display SNMP statistics for a specified device driver type." Choices: "Junos: Display SNMP statistics for JUNOS router drivers; junose-cops: Display SNMP statistics for JUNOSe router drivers; packetcable-cops: Display SNMP statistics for PCMM device drivers; proxy: Display SNMP statistics for third-party drivers." Default: "No value".

Buttons for "OK" and "Reset" are located at the bottom of the configuration pane.

- 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 all devices.
- In the Slot box, enter the number of the slot for which you want to display SNMP statistics for specific devices.
- Select a device type from the Type list:
  - junos—Displays SNMP statistics for device drivers running Junos OS
  - junose-cops—Displays SNMP statistics for JunosE router drivers
  - packetcable-COPS—Displays SNMP statistics for PCMM device drivers
  - proxy—Displays SNMP statistics for third-party drivers
- Click **OK**.

The Statistics/Device/Common pane displays statistics for the specified device.

### Related Documentation

- *Configuring SAE Properties for Global Default SNMP Communities for Use with JunosE Routers and Devices Running Junos OS*
- [Viewing SNMP Statistics for Devices \(C-Web Interface\) on page 39](#)



- *Viewing SNMP Statistics for Subscriber Sessions and Service Sessions (C-Web Interface)*



PART 4

# Troubleshooting

- [Troubleshooting Procedures on page 47](#)



# Troubleshooting Procedures

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 47](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 48](#)

## 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
- 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)*
- *Viewing Graphs from a Webpage*
- *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)*
- *Viewing Graphs from a Webpage*
- *Monitoring Activity on C Series Controllers*