



DMI Device Management With SRC Software



Modified: 2018-10-15

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

Juniper Networks, the Juniper Networks logo, Juniper, and Junos are registered trademarks of Juniper Networks, Inc. and/or its affiliates in the United States and other countries. All other trademarks may be property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

DMI Device Management With SRC Software
Copyright © 2018 Juniper Networks, Inc. All rights reserved.

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

YEAR 2000 NOTICE

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

END USER LICENSE AGREEMENT

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

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
Part 1	Overview	
Chapter 1	DMI Management Overview	3
	Managing DMI Devices Using the SRC Software and Junos Space Overview	3
	Configuration Overview	4
	Redundancy	4
	Managing DMI Devices on Routers Running Junos OS Using the SRC Software and Junos Space	5
Part 2	Configuration	
Chapter 2	Configuration Tasks for Managing DMI Devices on Routers Running Junos OS	9
	Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS (SRC CLI)	9
	Adding the Router Running Junos OS as a DMI Network Device (SRC CLI)	9
	Configuring the Junos DMI Driver (SRC CLI)	11
	Specifying Initialization Scripts for DMI-Enabled Routers Running Junos OS (SRC CLI)	13
	Configuring the Session Store Feature (SRC CLI)	14
	Configuring Session Store Parameters for a Device Driver	14
	Configuring Global Session Store Parameters	17
	Reducing the Size of Objects for the Session Store Feature	18
	Migrating from the Junos (BEEP) Driver to the Junos DMI Driver (SRC CLI)	19
Part 3	Administration	
Chapter 3	Monitoring Juniper Networks Routers Running Junos OS	23
	Viewing the State of Device Drivers Running Junos OS (SRC CLI)	23
	Viewing the State of Device Drivers Running Junos OS (C-Web Interface)	24
	Viewing Statistics for Specific Device Drivers Running Junos OS (SRC CLI)	25

	Viewing Statistics for Specific Device Drivers Running Junos OS (C-Web Interface)	26
	Viewing Statistics for All Device Drivers Running Junos OS (SRC CLI)	27
	Viewing Statistics for All Device Drivers Running Junos OS (C-Web Interface) . .	28
	Monitoring Interactions Between the SAE and Devices Running Junos OS	29
	Using SNMP to Retrieve Information from Devices Running Junos OS and Other Network Devices	29
Part 4	Troubleshooting	
Chapter 4	Troubleshooting Problems with Juniper Networks Routers Running Junos OS	33
	Troubleshooting Problems with the SRC Software Process	33
Chapter 5	Troubleshooting Procedures	35
	Collecting Data with the Activity Monitor (SRC CLI)	35
	Collecting Data with the Activity Monitor (C-Web Interface)	36

List of Figures

Part 3	Administration	
Chapter 3	Monitoring Juniper Networks Routers Running Junos OS	23
	Figure 1: C-Web Interface for Monitoring Device Drivers Running Junos OS	25
	Figure 2: C-Web Interface for Monitoring SNMP Statistics about all Devices	27
	Figure 3: C-Web Interface for Monitoring SNMP Statistics about Specific Device	28

List of Tables

About the Documentation	ix
Table 1: Notice Icons	x
Table 2: Notice Icons	xi
Table 3: Text Conventions	xi

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

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







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

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

Documentation Conventions

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

Table 1: Notice Icons

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

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>

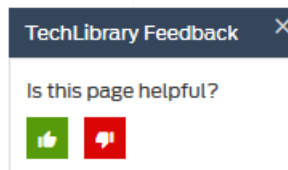
Table 3: Text Conventions (continued)

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"> • <code>system ldap server{ stand-alone;</code> • Use the <code>request sae modify device failover command</code> with the <code>force</code> option • <code>user@host# ...</code> • https://www.juniper.net/techpubs/software/management/sdx/api-index.html
Italic sans serif typeface	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.
Italic typeface	<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 <code>/etc/default.properties</code> 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.)	diagnostic line

Documentation Feedback

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

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



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

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

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active 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 <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

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

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

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 <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

- [DMI Management Overview on page 3](#)

CHAPTER 1

DMI Management Overview

- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)
- [Managing DMI Devices on Routers Running Junos OS Using the SRC Software and Junos Space on page 5](#)

Managing DMI Devices Using the SRC Software and Junos Space Overview

Using the SRC Junos Device Management Interface (DMI) router driver and Junos Space, you can manage DMI-enabled routers running Junos OS. Junos Space provides the ability to manage all Junos devices that provide a DMI. Using the Junos Space GUI, you can discover and manage DMI devices. The SRC software uses the Junos Space REST API to configure, monitor, and synchronize with DMI devices.

The SRC Junos DMI router driver provides the integration between the SRC software and Junos Space to manage Junos devices using the Junos Space REST API. The SRC Junos DMI router driver is an alternative to the SRC Junos BEEP router driver implementation, which is obsolete and is not supported on all devices running Junos OS.

All currently supported BEEP features are available with the Junos DMI router driver, including stateless firewall filters, CoS and advanced services policies (stateful firewall and NAT). As with the current Junos (BEEP) router driver, script services that use the Junos XML management protocol command channel are also supported. All drivers configured within a single SRC host are connected to the same Junos Space cluster. The Junos DMI driver is independent of the BEEP driver. Both drivers can be active at the same time but cannot be connected to the same router running Junos OS.

To provide redundancy, you can configure multiple instances of the Junos DMI driver for the same router running Junos OS. Only one driver for a given device is active at the same time.

Like all SAE router drivers, the Junos DMI driver reacts to requests from the device that signals subscribers logging in and logging out. The driver publishes Interface Tracking events, performs interface classification to determine any default policies, and initiates SAE subscriber session login and logout processing. The driver can dynamically activate, modify, and deactivate policies for existing subscriber sessions, or terminate a subscriber session. The driver can synchronize the state of a single subscriber session or all sessions.

Configuration Overview

With the Junos (BEEP) driver, because the `sdx` daemon establishes the connection to the SRC software, you need to configure the SRC server on the device. You also need to create the `sdx` and `sdx-sessions` groups and add them to the `apply-groups` with the highest priority. However, the Junos DMI router driver initiates the connection to the Junos Space cluster and does not communicate with the router directly. As a result, no additional configuration is required on the Junos Space cluster, or on the router to specify the SRC server. For the groups and the `apply-groups` configuration, the Junos DMI router driver automatically configures the device.

The groups name under which you install the SRC policies is configurable. However, for backward compatibility with the Junos (BEEP) router driver, the default groups name is “`sdx`” and “`sdx-sessions`.”

Redundancy

For redundancy, multiple SRC hosts can be configured in a community. The community manager appoints a master to become active. The active driver connects to the Junos Space cluster and manages the router. The standby driver does not connect to Junos Space, or send any configuration to the router unless it detects the failure of the master and switches over.

Selecting an active driver requires that the network be reachable between all drivers managing a particular router.

If a community member cannot reach its peers, it appoints the local driver as an isolated master. When connectivity is restored, multiple masters may be active. The following scheme is used to resolve this issue:

1. If a driver is appointed and it cannot connect to the Junos Space cluster that has active connections to its device, the driver shuts down.
2. If two masters are active at the same time, they send pings to each other. In this case, one of the masters will be demoted and the other performs a full synchronization.

The Juniper Networks database is used to look up the endpoint address of the peers, so the drivers must be configured to use a shared Juniper Networks database (for example, by configuring the local Juniper Networks database to participate in the same directory community).

Related Documentation

- [Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS \(SRC CLI\) on page 9](#)
- [Adding the Router Running Junos OS as a DMI Network Device \(SRC CLI\) on page 9](#)
- [Configuring the Junos DMI Driver \(SRC CLI\) on page 11](#)

Managing DMI Devices on Routers Running Junos OS Using the SRC Software and Junos Space

For information about which devices running Junos OS and releases a particular SRC release supports, see the *SRC Release Notes*.

Using the SRC Device Management Interface (DMI) driver and Junos Space, the SRC software can manage DMI devices connected to routers running Junos OS. The SRC software communicates with Junos Space using the representational state transfer (REST) over HTTP(S), and Junos Space manages the router running Junos OS over the DMI. The SRC software recognizes and receives notifications for changes to DMI devices connected to the router, allowing you to offer dynamic services on those devices. In addition, you can define and automatically provision policies for DMI devices, provide per-subscriber accounting for services on DMI devices, and develop script services for service sessions residing on DMI-managed devices.

The router stores data about interfaces and services that the SAE manages in a configuration group called `sdx`. When you use the DMI driver, the SRC software automatically creates this configuration group on the router.

- Related Documentation**
- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)
 - [Migrating from the Junos \(BEEP\) Driver to the Junos DMI Driver \(SRC CLI\) on page 19](#)

PART 2

Configuration

- [Configuration Tasks for Managing DMI Devices on Routers Running Junos OS on page 9](#)

CHAPTER 2

Configuration Tasks for Managing DMI Devices on Routers Running Junos OS

- [Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS \(SRC CLI\) on page 9](#)
- [Adding the Router Running Junos OS as a DMI Network Device \(SRC CLI\) on page 9](#)
- [Configuring the Junos DMI Driver \(SRC CLI\) on page 11](#)
- [Specifying Initialization Scripts for DMI-Enabled Routers Running Junos OS \(SRC CLI\) on page 13](#)
- [Configuring the Session Store Feature \(SRC CLI\) on page 14](#)
- [Migrating from the Junos \(BEEP\) Driver to the Junos DMI Driver \(SRC CLI\) on page 19](#)

Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS (SRC CLI)

To configure the SRC software to manage DMI-enabled routers running Junos OS through Junos Space:

1. [Add the router running Junos OS as a DMI network device. See “Adding the Router Running Junos OS as a DMI Network Device \(SRC CLI\)” on page 9.](#)
2. [Configure the SRC Junos DMI driver. See “Configuring the Junos DMI Driver \(SRC CLI\)” on page 11.](#)
3. [Configure the session store feature for the Junos DMI driver. See “Configuring the Session Store Feature \(SRC CLI\)” on page 14.](#)

Related Documentation

- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)
- [Adding the Router Running Junos OS as a DMI Network Device \(SRC CLI\) on page 9](#)
- [Configuring the Junos DMI Driver \(SRC CLI\) on page 11](#)

Adding the Router Running Junos OS as a DMI Network Device (SRC CLI)

Use the following configuration statements to configure the SAE to manage the DMI-enabled router running Junos OS:

```
shared network device name {
  description description;
  management-address management-address;
  device-type (junose | junos-ise | junos | junos-dmi | pcmm | third-party);
  interface-classifier interface-classifier ;
}
```

To add the router running Junos OS as a DMI network device:

1. From configuration mode, access the configuration statements that configure network devices. This procedure uses r1-dmi as the name of the router.

```
user@host# edit shared network device r1-dmi
```

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

```
[edit shared network device r1-dmi]
user@host# set description description
```

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

```
[edit shared network device r1-dmi]
user@host# set management-address management-address
```

4. (Optional) Specify the device type as DMI.

```
[edit shared network device r1-dmi]
user@host# set device-type junos-dmi
```

5. Configure an interface classifier for the network device. For more information about interface classifiers, see the *SRC PE Subscribers and Subscriptions Guide*.

```
[edit shared network device r1-dmi]
user@host# set interface-classifier interface-classifier
```

6. (Optional) Verify your configuration.

```
[edit shared network device r1-dmi]
user@host# show
description "Juniper Networks";
management-address 10.10.8.27;
device-type junos-dmi;
interface-classifier {
  rule rule-0 {
    script #;
  }
}
```


- Related Documentation**
- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)
 - [Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS \(SRC CLI\) on page 9](#)
 - [Configuring the Junos DMI Driver \(SRC CLI\) on page 11](#)

Configuring the Junos DMI Driver (SRC CLI)

Use the following configuration statements to configure the SAE to manage DMI devices through Junos Space:

```
shared sae configuration driver junos-dmi {
  junos-space-server-address junos-space-server-address;
  junos-space-port-number junos-space-port-number;
  junos-space-user-name junos-space-user-name;
  junos-space-password junos-space-password;
  junos-space-protocol (http | https);
  apply-group-name apply-group-name;
  sae-community-manager sae-community-manager;
}
```

To configure the SAE to manage DMI devices through the Junos Space:

1. From configuration mode, access the configuration statements that configure the DMI device driver.

```
user@host# edit shared sae configuration driver junos-dmi
```

2. Specify the IP address of the Junos Space server that manages the routers.

```
[edit shared sae configuration driver junos-dmi]
user@host# set junos-space-server-address junos-space-server-address
```

3. Specify the Junos Space port number.

```
[edit shared sae configuration driver junos-dmi]
user@host# set junos-space-port-number junos-space-port-number
```

4. (Optional) Specify the protocol used to connect to Junos Space.

```
[edit shared sae configuration driver junos-dmi]
user@host# set junos-space-protocol https
```

Where the protocol is one of the following:

- http
- https (default)

5. Specify the Junos Space username.

```
[edit shared sae configuration driver junos-dmi]
user@host# set junos-space-user-name junos-space-user-name
```

6. Specify the password to authenticate with Junos Space.

```
[edit shared sae configuration driver junos-dmi]
user@host# set junos-space-password junos-space-password
```

7. Specify the name of the group on the router running Junos OS in which provisioning objects are stored. This name must match the name configured on the router.

```
[edit shared sae configuration driver junos-dmi]
user@host# set apply-group-name apply-group-name
```

8. Specify the name of the community manager that manages DMI driver communities. Active SAEs are selected from this community.

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

9. (Optional) Verify your configuration.

```
[edit shared sae configuration driver junos-dmi]
user@host# show
junos-space-password *****;
junos-space-port-number 8080;
junos-space-protocol https;
junos-space-server-address 10.1.2.3;
junos-space-user-name user1;
apply-group-name sdx;
sae-community-manager sae_mgr;
}
```

Related Documentation

- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)
- [Summary of Tasks for Configuring the SRC Software to Manage DMI-Enabled Routers Running Junos OS \(SRC CLI\) on page 9](#)
- [Adding the Router Running Junos OS as a DMI Network Device \(SRC CLI\) on page 9](#)

Specifying Initialization Scripts for DMI-Enabled Routers Running Junos OS (SRC CLI)

Use the following configuration statements to specify initialization scripts for DMI-enabled routers running Junos OS:

```
shared sae configuration driver scripts {
  extension-path extension-path;
  general general;
  junos-dmi junos-dmi;
}
```

To configure initialization scripts for DMI-enabled routers running Junos OS:

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 DMI-enabled routers running Junos OS.

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

SAE runs the specified script when the connection between a DMI-enabled router and the SAE is established and again when the connection is dropped.

3. Configure 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 initialization 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
junos-dmi iorPublisher;
```

- Related Documentation**
- [Copying Initialization Scripts to the C Series Controller](#)
 - [Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers](#)

Configuring the Session Store Feature (SRC CLI)

You can configure three things for the session store feature:

1. [Configuring Session Store Parameters for a Device Driver on page 14](#)
2. [Configuring Global Session Store Parameters on page 17](#)
3. [Reducing the Size of Objects for the Session Store Feature on page 18](#)

Configuring Session Store Parameters for a Device Driver

Use the following configuration statements to configure session store parameters within a device driver configuration:

```
shared sae configuration driver ( aaa | junos | junos-dmi | junose | pcmm | simulated |
third-party | junos-gx ) session-store {
  maximum-queue-age maximum-queue-age;
  maximum-queued-operations maximum-queued-operations;
  maximum-queue-size maximum-queue-size;
  maximum-file-size maximum-file-size;
  minimum-disk-space-usage minimum-disk-space-usage;
  rotation-batch-size rotation-batch-size;
  maximum-session-size maximum-session-size;
  disk-load-buffer-size disk-load-buffer-size;
  network-buffer-size network-buffer-size;
  retry-interval retry-interval;
  communications-timeout communications-timeout;
  load-timeout load-timeout;
  idle-timeout idle-timeout;
  maximum-backlog-ratio maximum-backlog-ratio;
  minimum-backlog minimum-backlog;
}
```

To configure session store parameters within a device driver configuration:

1. From configuration mode, access the configuration statement that configures the session store for your device driver. In this sample procedure, the session store for a Junos device driver is configured in the se-region group.

```
user@host# edit shared sae group se-region configuration driver junos session-store
```

2. (Optional) Specify the maximum age that a queue of buffered store operations (such as adding a session to the store or removing a session from the store) can reach before the queue is written to a session store file.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set maximum-queue-age maximum-queue-age
```

3. (Optional) Specify the number of buffered store operations that are queued before the queue is written to a session store file.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set maximum-queued-operations maximum-queued-operations
```

4. (Optional) Specify the maximum size that a queue of buffered store operations can reach before the queue is written to a session store file.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set maximum-queue-size maximum-queue-size
```

5. (Optional) Specify the maximum size of session store files.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set maximum-file-size maximum-file-size
```

6. (Optional) Specify the percentage of space in all session store files that is used by live sessions.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set minimum-disk-space-usage minimum-disk-space-usage
```

7. (Optional) Specify the number of sessions that are rotated from the oldest file to the newest file at the same time that the oldest session store file is rotated.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set rotation-batch-size rotation-batch-size
```

8. (Optional) Specify the maximum size of a single subscriber or service session.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set maximum-session-size maximum-session-size
```

9. (Optional) Specify the size of the buffer that is used to load all of a session store's files from disk at startup.

```
[edit shared sae group se-region configuration driver junos session-store]
user@host# set disk-load-buffer-size disk-load-buffer-size
```

10. (Optional) Specify the size of the buffer that holds messages or message segments that are waiting to be sent to passive session stores.

```
[edit shared sae group se-region configuration driver junos session-store]
```

```
user@host# set network-buffer-size network-buffer-size
```

11. (Optional) Specify the time interval between attempts by the active session store to connect to missing passive session stores.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set retry-interval retry-interval
```

12. (Optional) Specify the amount of time that a session store waits before closing when it is blocked from reading or writing a message.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set communications-timeout communications-timeout
```

13. (Optional) Specify the time that an active session store waits for a passive session store or a passive session store waits for an active session store to load its data from disk before it closes the connection to the session store.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set load-timeout load-timeout
```

14. (Optional) Specify the time that a passive session store waits for activity from the active session store before it closes the connection to the active session store.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set idle-timeout idle-timeout
```

15. (Optional) Specify when the active session store closes the connection to a passive session store because of a backlog of messages waiting to be sent.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set maximum-backlog-ratio maximum-backlog-ratio
```

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# set minimum-backlog minimum-backlog
```

16. (Optional) Verify your configuration.

```
[edit shared sae group se-region configuration driver junos session-store]  
user@host# show  
maximum-queue-age 5000;  
maximum-queued-operations 50;  
maximum-queue-size 51050;  
maximum-file-size 25000000;  
minimum-disk-space-usage 25;
```

```

rotation-batch-size 50;
maximum-session-size 10000;
disk-load-buffer-size 1000000;
network-buffer-size 51050;
retry-interval 5000;
communications-timeout 60000;
load-timeout 420000;
idle-timeout 3600000;
maximum-backlog-ratio 1.5;
minimum-backlog 5000000;

```

See Also • [Creating Grouped Configurations for the SAE \(SRC CLI\)](#)

Configuring Global Session Store Parameters

This topic describes how to configure global session store parameters that are shared by all session store instances (active or passive) on the SAE. You can also configure session store parameters within a device driver configuration.

Use the following configuration statements to configure global session store parameters.

```

shared sae configuration driver session-store {
  file-expiry-age file-expiry-age;
  file-expiry-check-interval file-expiry-check-interval;
  ip-address ip-address;
  port port;
  root-directory root-directory;
}

```

To configure global session store parameters:

1. From configuration mode, access the configuration statement that configures the global session store parameters. In this sample procedure, the global session store is configured in the `se-region` group.

```

user@host# edit shared sae group se-region configuration driver session-store

```

2. (Optional) Specify the expiry age of the dormant session store file. The service activation engine (SAE) deletes the session store file if it is not modified for the configured period. The value range is 0–2,147,483,647 milliseconds. By default, the value is set to 604,800,000 milliseconds—that is, 7 days.

```

[edit shared sae group se-region configuration driver session-store]
user@host# set file-expiry-age file-expiry-age

```

3. (Optional) Specify the frequency at which the server monitors the age of the session store file. The value range is 1000–2,147,483,647 milliseconds. By default, the value is set to 3,600,000 milliseconds—that is, 1 hour.

```
[edit shared sae group se-region configuration driver session-store]
user@host# set file-expiry-check-interval file-expiry-check-interval
```

- (Optional) Specify the IP address or hostname that the session store infrastructure on this SAE uses to listen for incoming TCP connections from active session stores.

```
[edit shared sae group se-region configuration driver session-store]
user@host# set ip-address ip-address
```

- (Optional) Specify the TCP port number on which the session store infrastructure on this SAE listens for incoming connections from active session stores.

```
[edit shared sae group se-region configuration driver session-store]
user@host# set port port
```

- (Optional) Specify the root directory in which the session store creates files.

```
[edit shared sae group se-region configuration driver session-store]
user@host# set root-directory root-directory
```

- (Optional) Verify your configuration.

```
[edit shared sae group se-region configuration driver session-store]
user@host# show
file-expiry-age 604800000;
file-expiry-check-interval 3600000;
ip-address 10.10.70.0;
port 8820;
root-directory var/sessionStore;
```



NOTE: For the `set file-expiry-age` and `set file-expiry-age-check-interval` parameters, we recommend that you configure a value that is nearer to the default value. You must restart the SAE for the configuration changes to take effect.

See Also • [Creating Grouped Configurations for the SAE \(SRC CLI\)](#)

Reducing the Size of Objects for the Session Store Feature

You can use serialized data compression to reduce the size of sessions objects that the SAE sends across the network for the session store feature. Enabling this property reduces the size of objects, but increases the CPU load on the SAE.

Use the following configuration statement to specify whether or not session objects are compressed.

```
shared sae configuration {  
  compress-session-data;  
}
```

To specify whether or not session objects are compressed:

1. From configuration mode, access the sae configuration. In this sample procedure, data compression is configured in the se-region group.

```
user@host# edit shared sae group se-region configuration
```

2. Enable reducing the size of session objects (subscriber and service sessions) that the SAE sends across the network for the session store feature.

```
[edit shared sae group se-region configuration]  
user@host# set compress-session-data
```

3. (Optional) Verify your configuration.

```
[edit shared sae group se-region configuration]  
user@host# show compress-session-data  
compress-session-data;
```

- See Also**
- [Creating Grouped Configurations for the SAE \(SRC CLI\)](#)
 - [Storing Subscriber and Service Session Data](#)
 - [Viewing the Synchronization Status of SAE Session Stores \(SRC CLI\)](#)

Migrating from the Junos (BEEP) Driver to the Junos DMI Driver (SRC CLI)

Migrating active sessions is not supported when upgrading to SRC Release 4.2 from previous releases of SRC software. This applies when running BEEP, or when migrating from the BEEP driver to DMI driver.

- Related Documentation**
- [Managing DMI Devices Using the SRC Software and Junos Space Overview on page 3](#)

PART 3

Administration

- [Monitoring Juniper Networks Routers Running Junos OS on page 23](#)

CHAPTER 3

Monitoring Juniper Networks Routers Running Junos OS

- Viewing the State of Device Drivers Running Junos OS (SRC CLI) on page 23
- Viewing the State of Device Drivers Running Junos OS (C-Web Interface) on page 24
- Viewing Statistics for Specific Device Drivers Running Junos OS (SRC CLI) on page 25
- Viewing Statistics for Specific Device Drivers Running Junos OS (C-Web Interface) on page 26
- Viewing Statistics for All Device Drivers Running Junos OS (SRC CLI) on page 27
- Viewing Statistics for All Device Drivers Running Junos OS (C-Web Interface) on page 28
- Monitoring Interactions Between the SAE and Devices Running Junos OS on page 29
- Using SNMP to Retrieve Information from Devices Running Junos OS and Other Network Devices on page 29

Viewing the State of Device Drivers Running Junos OS (SRC CLI)

Purpose Display the state of drivers running Junos OS.

Action Use the following operational mode command:

```
show sae drivers <device-name device-name> <(brief)> <maximum-results  
maximum-results>
```

For example:

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

```
Driver running Junos OS
Device name                default@jrouter
Device type                 device running junos OS
Device IP                   /10.10.6.113:1879
Local IP                    10.10.6.113
TransportRouter
Device version              8.2R1.7
Start time                  Thu Mar 08 21:00:50 UTC 2007
Number of notifications     0
Number of processed added   0
Number of processed changed 0
```

```

Number of processed deleted          0
Number of provisioning attempt       0
Number of provisioning attempt failed 0
Device type                          JunosRouterDriver
Job queue size                       0
Number of SAP                        3
Number of PAP                        0
Number of active user sessions       100
Number of active service sessions    0
Start time                          Thu Mar 08 21:00:55 UTC 2007
End time                             Thu Mar 08 21:00:55 UTC 2007
Transaction Manager
Transaction queue size 0
Router name                          default@tro11
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

```

- Related Documentation**
- [Viewing the State of Device Drivers Running Junos OS \(C-Web Interface\) on page 24](#)
 - [Troubleshooting Problems with the SRC Software Process on page 33](#)
 - [Viewing Statistics for Specific Device Drivers Running Junos OS \(SRC CLI\) on page 25](#)
 - [Viewing Statistics for All Device Drivers Running Junos OS \(SRC CLI\) on page 27](#)

Viewing the State of Device Drivers Running Junos OS (C-Web Interface)

Problem **Description:** Log files indicate a problem with a specific driver.

Solution Review the configuration of the associated device driver running Junos OS with C-Web:

1. Select **SAE** from the side pane, and click **Drivers**.

The Drivers pane appears.

Figure 1: C-Web Interface for Monitoring Device Drivers Running Junos OS

The screenshot shows the 'Drivers' configuration page in the Juniper C-Web Interface. The sidebar on the left is expanded to 'SAE', and the 'Drivers' sub-pane is active. The main content area contains a form with the following fields:

- Name Of Device Driver:** A text input field.
- Style:** A dropdown menu.
- Maximum Results:** A text input field.

Below the form are 'OK' and 'Reset' buttons. To the right of the form, there is a help text box:

Name of device drivers:
Please enter: All or part of the device driver name. For JUNOS router drivers and PCMM drivers, use the format default@routerName.

Output style
Choices:
brief: Display only virtual router names

Number of results to be displayed.
Legal range: 1 .. INF
Default value: 25

The footer of the interface includes the copyright notice: Copyright © 2007, Juniper Networks, Inc. All Rights Reserved. Trademark Notice. Privacy. and the Juniper logo.

2. In the Name of Device Driver 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. Use the format:

```
default@<router name>
```

3. Select an output style from the Style list.
4. In the Maximum Results box, enter the maximum number of results that you want to receive.
5. Click **OK**.

The Drivers pane displays information about the device driver running Junos OS.

Related Documentation

- [Viewing the State of Device Drivers Running Junos OS \(SRC CLI\) on page 23](#)
- [Viewing Statistics for Specific Device Drivers Running Junos OS \(C-Web Interface\) on page 26](#)
- [Viewing Statistics for All Device Drivers Running Junos OS \(C-Web Interface\) on page 28](#)

Viewing Statistics for Specific Device Drivers Running Junos OS (SRC CLI)

Purpose Display statistics for a specific device driver running Junos OS.

Action Use the following operational mode command:

```
show sae statistics device <name name> < (brief) >
```

For example:

```
user@host> show sae statistics device name default@jrouter
```

```
SNMP Statistics
Add notification handle time      7
Change notification handle time   0
Client ID                         default@troll
Delete notification handle time   0
Failover IP                       0.0.0.0
Failover port                     0
Handle message time              40
Job queue age                    0
Job queue time                   0
Number message send              3
Number of added jobs             0
Number of add notifications      0
Number of change notifications   0
Number of delete notifications   0
Number of managed interfaces     3
Number of message errors         0
Number of message timeouts       0
Number of removed jobs          0
Number of user session established 0
Number of user session removed   0
Router type                      Device running Junos OS
Up time                          7036120
Using failover server            false
Number of active user sessions   100
Number of active service sessions 0
```

- Related Documentation**
- [Viewing Statistics for Specific Device Drivers Running Junos OS \(C-Web Interface\) on page 26](#)
 - [Viewing the State of Device Drivers Running Junos OS \(SRC CLI\) on page 23](#)
 - [Viewing Statistics for All Device Drivers Running Junos OS \(SRC CLI\) on page 27](#)

Viewing Statistics for Specific Device Drivers Running Junos OS (C-Web Interface)

Purpose View SNMP statistics about devices.

- Action** 1. Select **SAE** from the side pane, click **Statistics**, and then click **Device**.

The Device pane appears.

Figure 2: C-Web Interface for Monitoring SNMP Statistics about all Devices

The screenshot shows the Juniper C-Web Interface. The top navigation bar includes 'Monitor', 'Logged in as: admin', 'About', 'Refresh', and 'Logout'. The left sidebar lists various components: ACP, CLI, Component, Date, Disk, Interfaces..., JPS, NIC, HTTP, Redirect Server, Route..., SAE (highlighted), Security, and System. The main content area is titled 'Device' and contains the following fields:

- Device Name:** An input field with a placeholder. A tooltip indicates: 'Name of a device. Please enter: All or part of the device name. For JUNOS router drivers and PCMM drivers, use the format default@routerName.'
- Style:** A dropdown menu. A tooltip indicates: 'Output style Choices: brief: Display only device names'.
- Buttons:** 'OK' and 'Reset' buttons.

The footer of the interface shows 'Copyright © 2007, Juniper Networks, Inc. All Rights Reserved. Trademark Notice. Privacy.' and the Juniper logo.

- 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.
- Select an output style from the Style list.
- Click **OK**.

The Device pane displays statistics for all devices.

- Related Documentation**
- Viewing Statistics for Specific Device Drivers Running Junos OS (SRC CLI) on page 25
 - Viewing the State of Device Drivers Running Junos OS (C-Web Interface) on page 24
 - Viewing Statistics for All Device Drivers Running Junos OS (C-Web Interface) on page 28

Viewing Statistics for All Device Drivers Running Junos OS (SRC CLI)

Purpose Display SNMP statistics for all device drivers running Junos OS.

Action Use the following operational mode command:

```
show sae statistics device common junos
```

For example:

```
user@host> show sae statistics device common junos
SNMP Statistics
Driver type           Driver running 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	3288
Time since last redirect	0

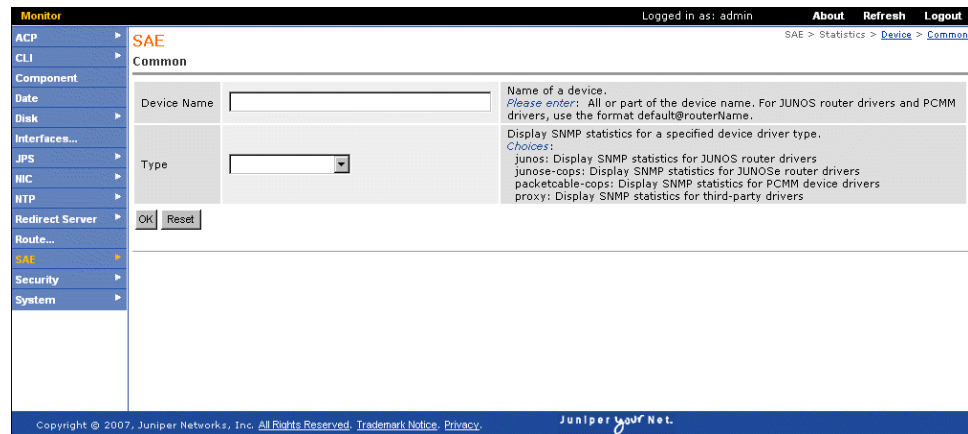
- Related Documentation**
- [Viewing Statistics for All Device Drivers Running Junos OS \(C-Web Interface\) on page 28](#)
 - [Viewing the State of Device Drivers Running Junos OS \(SRC CLI\) on page 23](#)
 - [Viewing Statistics for Specific Device Drivers Running Junos OS \(SRC CLI\) on page 25](#)

Viewing Statistics for All Device Drivers Running Junos OS (C-Web Interface)

Purpose View SNMP statistics about specific devices.

- Action**
1. Select **SAE** from the side pane, click **Statistics**, click **Device**, and then click **Common**.
The Common pane appears.

Figure 3: C-Web Interface for Monitoring SNMP Statistics about Specific Device



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. Select the **junos** from the Type list:
4. Click **OK**.

The Common pane displays statistics for the specified device.

- Related Documentation**
- [Viewing Statistics for All Device Drivers Running Junos OS \(SRC CLI\) on page 27](#)
 - [Viewing the State of Device Drivers Running Junos OS \(C-Web Interface\) on page 24](#)
 - [Viewing Statistics for Specific Device Drivers Running Junos OS \(C-Web Interface\) on page 26](#)

Monitoring Interactions Between the SAE and Devices Running Junos OS

Purpose Monitor the connection between the SAE and a device running Junos OS.

Action Use the following command on devices running Junos OS to monitor the connection between the device running Junos OS and the SAE.

```
root@ui1>
show system services service-deployment

Connected to 172.17.20.151 port 3333 since 2004-02-06 14:50:31 PST
Keepalive settings: Interval 15 seconds
Keepalives sent: 100, Last sent: 6 seconds ago
Notifications sent: 0
Last update from peer: 00:00:06 ago
```

You can also monitor the interactions between the SRC software and devices running Junos OS in the log files for the SAE and in the log files generated by the SRC software process on the device running Junos OS.

Related Documentation

- *Configuring Devices Running Junos OS to Interact with the SAE*
- *Configuring the Device Running Junos OS to Apply Changes It Receives from the SAE*
- *Disabling Interactions Between the SAE and Devices Running Junos OS*
- *Logging for SRC Components Overview*
- For information about configuring logging on devices running Junos OS, see the *Junos OS System Basics Configuration Guide*.

Using SNMP to Retrieve Information from Devices Running Junos OS and Other Network Devices

You can use SNMP to retrieve information from a router running Junos OS or a network device. For example, if you create a router initialization script that uses SNMP, you need to specify the SNMP communities that are on the router.

We recommend that you specify SNMP communities for each virtual router. You can also configure global default SNMP communities.

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**

- *Developing Router Initialization Scripts for Network Devices and Juniper Networks Routers*
- *Adding Devices Running Junos OS and Virtual Routers Overview*
- *Adding Virtual Routers Individually (C-Web Interface)*
- *Specifying Initialization Scripts of Routers Running Junos OS on the SAE (C-Web Interface)*

PART 4

Troubleshooting

- [Troubleshooting Problems with Juniper Networks Routers Running Junos OS on page 33](#)
- [Troubleshooting Procedures on page 35](#)

Troubleshooting Problems with Juniper Networks Routers Running Junos OS

- [Troubleshooting Problems with the SRC Software Process on page 33](#)

Troubleshooting Problems with the SRC Software Process

Problem **Description:** The SRC process on a device running Junos OS is not working as expected.

Solution Review the log files for the SAE and the log files generated by the SRC software process on the router. If the log files indicate that the SRC software process on the device running Junos OS is not responding:

1. Look at the status of the process on the device running Junos OS.

```
root@ui1>show system services service-deployment
Connected to 172.17.20.151 port 3333 since 2004-02-06 14:50:31 PST
Keepalive settings: Interval 15 seconds
Keepalives sent: 100, Last sent: 6 seconds ago
Notifications sent: 0
Last update from peer: 00:00:06 ago
```

2. If you see the message “error: the service-deployment subsystem is not running,” re-enable the SRC software process. See *Disabling Interactions Between the SAE and Devices Running Junos OS*.
3. If the process is already enabled, review the configurations of the router and the SAE in the directory, and fix any problems.
4. Restart the SRC software process on the router.

```
root@ui1>restart service-deployment
```

The SAE synchronizes with the SRC software process and deletes unnecessary data from the router.

If deleting parts of the SRC data on a device running Junos OS fails to solve problems, delete all the SRC data and restart the SRC software process. To do so:

1. Delete all SRC interfaces and services.

```
delete groups sdx
root@ui1#commit
```

2. Restart the SRC software process on the router.

```
root@ui1>restart service-deployment
```

**Related
Documentation**

- *Viewing Information About Policies on the SAE (SRC CLI)*
- *Viewing Information About Policies (C-Web Interface)*
- *Viewing Information About SAE Interfaces (SRC CLI)*
- *Viewing Information About Interfaces (C-Web Interface)*
- *Viewing Information About Services (SRC CLI)*
- *Viewing Information About Services (C-Web Interface)*

Troubleshooting Procedures

- [Collecting Data with the Activity Monitor \(SRC CLI\) on page 35](#)
- [Collecting Data with the Activity Monitor \(C-Web Interface\) on page 36](#)

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*