

## Monitor Components Connectivity (MCC)



Modified: 2019-08-28

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*Monitor Components Connectivity (MCC)*

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# About the Documentation

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## 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/>.

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

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Table 1 on page viii 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 viii](#) defines the notice icons used in this guide. [Table 3 on page ix](#) 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> <i>cache-entry-age</i>
Fixed-width text like this	Represents information as displayed on your terminal's screen, such as CLI commands in output displays.	<pre>nic-locators {   login {     resolution {       resolver-name /realms/       login/A1;       key-type LoginName;       value-type SaeId;     }   } }</pre>
Regular sans serif typeface	<ul style="list-style-type: none"> <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><b>system ldap server{</b> <b>stand-alone;</b></li> <li>Use the <b>request sae modify device failover</b> <b>command</b> with the force option</li> <li><b>user@host# ...</b></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>

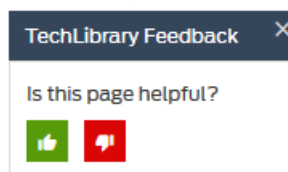
Table 3: Text Conventions (continued)

<i>Italic sans serif typeface</i>	Represents variables in SRC CLI commands.	<code>user@host# set local-address local-address</code>
Angle brackets	In text descriptions, indicate optional keywords or variables.	Another runtime variable is <gfwif>.
Key name	Indicates the name of a key on the keyboard.	Press Enter.
Key names linked with a plus sign (+)	Indicates that you must press two or more keys simultaneously.	Press Ctrl + b.
<i>Italic typeface</i>	<ul style="list-style-type: none"> <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 <i>/etc/default.properties</i> 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.)	<code>diagnostic   line</code>

## 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](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

## Requesting Technical Support

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Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <https://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

## Self-Help Online Tools and Resources

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

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

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

## Creating a Service Request with JTAC

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

- Visit <https://myjuniper.juniper.net>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

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



## PART 1

# Overview

- [Software Features Overview on page 3](#)
- [Monitor Components Connectivity on page 7](#)



## CHAPTER 1

# Software Features Overview

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

## SRC Component Overview

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

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

*Table 4: Descriptions of SRC Components*

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

Table 4: Descriptions of SRC Components (continued)

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



Table 4: Descriptions of SRC Components (continued)

Component	Description
<b>Service Management Applications (Run on external system)</b>	
IMS Services Gateway	Integrates into an IP multimedia system (IMS) environment. The SRC software provides a Diameter protocol-based interface that allows the SRC software to integrate with services found on the application layer of IMS.
<b>SRC Programming Interfaces</b>	
NETCONF API	Allows you to configure or request information from the NETCONF server on a C Series Controller that runs the SRC software. Applications developed with the NETCONF API run on a system other than a C Series Controller.
CORBA plug-in service provider interface (SPI)	Tracks sessions and enables linking the rest of the service provider's operations support system (OSS) with the SRC software so that the OSS can be notified of events in the life cycle of SAE sessions. Hosted plug-ins only.
CORBA remote API	Provides remote access to the SAE core API. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
NIC access API	Performs NIC resolutions. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
SAE core API	Controls the behavior of the SRC software. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
Script services	Provides an interface to call scripts that supply custom services such as provisioning policies on a number of systems across a network.
VTA API	The Volume Tracking Application (VTA) API is a Simple Object Access Protocol (SOAP) interface that allows developers to create gateway clients and that administrators use to manage VTA subscribers and sessions. The SRC Web Services Gateway allows a gateway client—an application that is not part of the SRC network—to interact with SRC components, such as the VTA, through a SOAP interface.
<b>Authorization and Accounting Applications</b>	
AAA RADIUS servers	Authenticates subscribers and authorizes their access to the requested system or service. Accepts accounting data—time active and volume of data sent—about subscriber and service sessions. RADIUS servers run on a system other than a C Series Controller.
SRC Admission Control Plug-In (SRC ACP)	Authorizes and tracks subscribers' use of network resources associated with services that the SRC application manages.
Flat file accounting	Stores tracking data to accounting flat files that can be made available to external systems that send the data to a rating and billing system.

Table 4: Descriptions of SRC Components (continued)

Component	Description
Volume Tracking Application	<p>The SRC Volume Tracking Application (SRC VTA) is an SRC component that allows service providers to track and control the network usage of subscribers and services. You can control volume and time usage on a per-subscriber or per-service basis. This level of control means that service providers can offer tiered services that use volume as a metric, while also controlling abusive subscribers and applications.</p> <p>When a subscriber or service exceeds bandwidth limits (or quotas), the SRC VTA can take actions including imposing rate limits on traffic, sending an e-mail notification, or charging extra for additional bandwidth consumed.</p>
<b>Demonstration Applications (available on the Juniper Networks Website)</b>	
Enterprise Audit Plug-In	Defines a callback interface, which receives events when IT managers complete specified operations.
Enterprise Manager Portal	<p>Allows service providers to provision services for enterprise subscribers on routers running JunosE or Junos OS and allows IT managers to manage services.</p> <p>Enterprise Manager Portal can be used with NAT Address Management Portal to allow service providers to manage public IP addresses for use with NAT services on routers running Junos OS and to all IT managers to make requests about public IP addresses through the Enterprise Manager Portal.</p>
Monitoring Agent application	Integrates IP address managers, such as a DHCP server or a RADIUS server, into an SRC-managed network so that the SAE is notified about subscriber events. The Monitoring Agent application runs on a Solaris platform.
Residential service selection portals	Provides a framework for building Web applications that allow residential and enterprise subscribers to manage their own network services. It comes with several full-featured sample Web applications that are easy to customize and suitable for deployment. The Residential service selection portals run on a Solaris platform.
Sample enterprise service portal	Lets service providers supply an interface to their business customers for managing and provisioning services.

**Related Documentation** • *SRC Product Description*

## CHAPTER 2

# Monitor Components Connectivity

- [Monitor Components Connectivity \(MCC\) Overview on page 7](#)

## Monitor Components Connectivity (MCC) Overview

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The Monitor Components Connectivity (MCC) component monitors the connectivity state between SAEs in a community and between SAE and RADIUS server periodically and collects diagnostic information about the connectivity state of the components, such as connection error, connection timeout, and socket read/write timeout. MCC logs are stored in the `/opt/UMC/mcc/var/log/cc-logs/<source-ip>--<destination-ip>.log` file. You can use the `/opt/UMC/mcc/etc/mcc-config.properties` file to configure the MCC.



**NOTE:** MCC monitors the connectivity only between SAEs in a community and between SAE and RADIUS server. MCC does not support monitoring other SRC components.

### Related Documentation

- [Configuring MCC to Monitor Connectivity Between SAEs and Between SAE and RADIUS Server on page 11](#)
- [Configuring MCC to Monitor Connectivity Between SAEs in a Community on page 12](#)
- [Configuring MCC to Monitor Connectivity Between SAE and RADIUS Server on page 12](#)



## PART 2

# Administration

- [Managing MCC on page 11](#)



## CHAPTER 3

# Managing MCC

- [Configuring MCC to Monitor Connectivity Between SAEs and Between SAE and RADIUS Server on page 11](#)
- [Configuring MCC to Monitor Connectivity Between SAEs in a Community on page 12](#)
- [Configuring MCC to Monitor Connectivity Between SAE and RADIUS Server on page 12](#)

## Configuring MCC to Monitor Connectivity Between SAEs and Between SAE and RADIUS Server

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You can use the `/opt/UMC/mcc/etc/mcc-config.properties` file to configure the Monitor Components Connectivity (MCC) component to monitor the connectivity state between SAEs in a community and between SAE and RADIUS server periodically.



**NOTE:** MCC monitors the connectivity only between SAEs in a community and between SAE and RADIUS server. MCC does not support monitoring other SRC components.

To configure MCC to monitor connectivity state between SAEs in a community and between SAE and RADIUS server:

1. In the `/opt/UMC/mcc/etc/mcc-config.properties` file, set the **type** attribute to **all-components**.

**type**=all-components

2. Set the **polling-interval** attribute with a time interval at which you want the MCC to monitor the connectivity between the SRC components. By default, this attribute is set to 300000 milliseconds (that is, 5 minutes).

**polling-interval**=*time interval*

### Related Documentation

- [Monitor Components Connectivity \(MCC\) Overview on page 7](#)
- [Configuring MCC to Monitor Connectivity Between SAEs in a Community on page 12](#)
- [Configuring MCC to Monitor Connectivity Between SAE and RADIUS Server on page 12](#)

## Configuring MCC to Monitor Connectivity Between SAEs in a Community

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You can use the `/opt/UMC/mcc/etc/mcc-config.properties` file to configure the Monitor Components Connectivity (MCC) component to monitor the connectivity state between all configured SAEs in a community.

To configure MCC to monitor connectivity state between SAEs in a community:

1. In the `/opt/UMC/mcc/etc/mcc-config.properties` file, set the **type** attribute to **sae-to-sae**.  
  
`type=sae-to-sae`
2. Set the **polling-interval** attribute with a time interval at which you want the MCC to monitor the connectivity between all configured SAEs in a community. By default, this attribute is set to 300000 milliseconds (that is, 5 minutes).

`polling-interval=time interval`

### Related Documentation

- [Monitor Components Connectivity \(MCC\) Overview on page 7](#)
- [Configuring MCC to Monitor Connectivity Between SAEs and Between SAE and RADIUS Server on page 11](#)
- [Configuring MCC to Monitor Connectivity Between SAE and RADIUS Server on page 12](#)

## Configuring MCC to Monitor Connectivity Between SAE and RADIUS Server

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You can use the `/opt/UMC/mcc/etc/mcc-config.properties` file to configure the Monitor Components Connectivity (MCC) component to monitor the connectivity state between SAE and RADIUS server periodically.

To configure MCC to monitor connectivity state between SAE and RADIUS server:

1. In the `/opt/UMC/mcc/etc/mcc-config.properties` file, set the **type** attribute to **sae-to-radius**.  
  
`type=sae-to-radius`
2. Set the **polling-interval** attribute with a time interval at which you want the MCC to monitor the connectivity between the SAE and RADIUS server. By default, this attribute is set to 300000 milliseconds (that is, 5 minutes).

`polling-interval=time interval`

3. Configure the **rad-test-comm-code** attribute to set a RADIUS test command code which you want to use for testing the connectivity of the RADIUS server.



**rad-test-comm-code=Server-Status | Access-Request**

Setting the **rad-test-comm-code** attribute to **Server-Status** tests the connectivity by sending the Server-Status packet to the RADIUS server. The port used for the Server-Status packet is the actual RADIUS accounting port configured under the **[edit shared sae group group-name configuration plug-ins name name radius-accounting peer-group name server-port]** hierarchy level.

If the RADIUS server does not support the Server-Status packet, you can set the **rad-test-comm-code** attribute to **Access-Request**. This setting tests the connectivity by sending the Access-Request packet to the RADIUS server. For Access-request, a test username, password, and port need to be configured using the **rad-test-user**, **rad-test-pwd**, and **rad-auth-port** attributes, respectively. The password should be base64 encoded. By default, the **rad-auth-port** is set to 1812.

```
rad-test-user=username
rad-test-pwd=password
rad-auth-port=port
```



**NOTE:** If there are more than one RADIUS server configured for accounting, then the RADIUS test command code configuration is applicable for all RADIUS servers. For example, if there are three RADIUS servers configured and if the **rad-test-comm-code** attribute is set to **Server-Status**, then all three RADIUS servers should support the Server-Status command code.

Similarly, if the **rad-test-comm-code** attribute is set to **Access-Request**, all three RADIUS servers should be running in the configured port to do monitoring with the configured test username and password. Also, the test username and password configuration should be available in all three RADIUS servers.

#### Related Documentation

- [Monitor Components Connectivity \(MCC\) Overview on page 7](#)
- [Configuring MCC to Monitor Connectivity Between SAEs in a Community on page 12](#)
- [Configuring MCC to Monitor Connectivity Between SAEs and Between SAE and RADIUS Server on page 11](#)

