



MX Series Routers in an SRC-Managed Network



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MX Series Routers in an SRC-Managed Network

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About the Documentation

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- Supported Platforms on page vii
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Documentation and Release Notes

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

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Supported Platforms

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

- C Series

Documentation Conventions

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.

Documentation Conventions

Table 1 on page viii defines the notice icons used in this guide. Table 3 on page viii 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.

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.

Table 3: Text Conventions (*continued*)

Bold text like this	Represents text that the user must type.	user@host# set cache-entry-age <i>cache-entry-age</i>
Fixed-width text like this	Represents information as displayed on your terminal's screen, such as CLI commands in output displays.	<pre> nic-locators { login { resolution { resolver-name /realms/ login/A1; key-type LoginName; value-type SaeId; } } </pre>
Regular sans serif typeface	<ul style="list-style-type: none"> Represents configuration statements. Indicates SRC CLI commands and options in text. Represents examples in procedures. Represents URLs. 	<ul style="list-style-type: none"> system ldap server{ stand-alone; Use the request sae modify device failover command with the force option user@host# ... http://www.juniper.net/techpubs/software/management/sdx/api-index.html
<i>Italic sans serif typeface</i>	Represents variables in SRC CLI commands.	user@host# set local-address <i>local-address</i>
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"> Emphasizes words. Identifies book names. Identifies distinguished names. Identifies files, directories, and paths in text but not in command examples. 	<ul style="list-style-type: none"> There are two levels of access: <i>user</i> and <i>privileged</i>. <i>SRC-PE Getting Started Guide</i>. <i>o=Users, o=UMC</i> The <i>/etc/default.properties</i> file.
Backslash	At the end of a line, indicates that the text wraps to the next line.	<pre> Plugin.radiusAcct-1.class=\ net.juniper.smgmt.sae.plugin\ RadiusTrackingPluginEvent </pre>
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, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at

<https://www.juniper.net/cgi-bin/docbugreport/> . If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release 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 JNASC support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

Self-Help Online Tools and Resources

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

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://www.juniper.net/alerts/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

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

Opening a Case with JTAC

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

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/> .
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

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

PART 1

Overview

- [Software Features Overview on page 3](#)
- [Services with Diameter on MX Series Routers on page 9](#)
- [Subscriber Sessions on MX Series Routers on page 11](#)

CHAPTER 1

Software Features Overview

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

SRC Component Overview

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

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

Table 4: Descriptions of SRC Components

Component	Description
Server Components	
Service activation engine (SAE)	<ul style="list-style-type: none">• Authorizes, activates, and deactivates subscriber and service sessions by interacting with systems such as Juniper Networks routers, cable modem termination system (CMTS) devices, RADIUS servers, and directories.• Collects accounting information about subscribers and services from routers, and stores the information in RADIUS accounting servers, flat files, and other accounting databases.• Provides plug-ins and application programming interfaces (APIs) for starting and stopping subscriber and service sessions and for integrating with systems that authorize subscriber actions and track resource usage.
Subscriber Information Collector (SIC)	Used in conjunction with the MX Series router running the packet-triggered subscribers and policy control (PTSP) solution, the SIC listens for RADIUS accounting events from IP edge devices (accounting clients) and stores them in the Session State Registrar (SSR), or forwards them to a remote AAA server, allowing the SRC software to gain increased subscriber awareness. Additionally, the SIC can optionally edit accounting events before routing them.
Juniper Policy Server (JPS)	Acts as a policy decision point (PDP) and policy enforcement point (PEP) that manages the relationships between application managers and CMTS devices in a PCMM environment.

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

Component	Description
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.
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 Gx interface to mediate between the PCRF and Juniper Networks routers like the E Series Broadband Services routers and MX Series routers. The Gx interface on the SRC 3GPP gateway communicates with the PCRF 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>
Repository	
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>
Session State Registrar (SSR)	The SSR is a stateless, highly reliable and highly available database cluster. When used in conjunction with an MX Series router running the packet-triggered subscribers and policy control (PTSP) solution, the SSR stores the IP edge attachment subscriber sessions data learned from IP edge devices in the centralized SSR database.

SRC Configuration and Management Tools

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

Component	Description
SRC command line interface (CLI)	Provides a way to configure the SRC software on a C Series Controller from a Junos OS–like CLI. The SRC CLI includes the policies, services, and subscribers CLI, which has separate access privileges.
C-Web interface	Provides a way to configure, monitor, and manage the SRC software on a C Series Controller through a Web browser. The C-Web interface includes a policies, services, and subscribers component, which has separate access privileges.
Simple Network Management Protocol (SNMP) agent	Monitors system performance and availability. It runs on all the SRC hosts and makes management information available through SNMP tables and sends notifications by means of SNMP traps.
Service Management Applications (Run on external system)	
IMS Services Gateway	Integrates into an IP multimedia system (IMS) environment. The SRC software provides a Diameter protocol-based interface that allows the SRC software to integrate with services found on the application layer of IMS.
SRC Programming Interfaces	
NETCONF API	Allows you to configure or request information from the NETCONF server on a C Series Controller that runs the SRC software. Applications developed with the NETCONF API run on a system other than a C Series Controller.
CORBA plug-in service provider interface (SPI)	Tracks sessions and enables linking the rest of the service provider's operations support system (OSS) with the SRC software so that the OSS can be notified of events in the life cycle of SAE sessions. Hosted plug-ins only.
CORBA remote API	Provides remote access to the SAE core API. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
NIC access API	Performs NIC resolutions. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.
SAE core API	Controls the behavior of the SRC software. Applications that use these extensions to the SRC software run on a system other than a C Series Controller.

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

Component	Description
Script services	Provides an interface to call scripts that supply custom services such as provisioning policies on a number of systems across a network.
VTA API	The Volume Tracking Application (VTA) API is a Simple Object Access Protocol (SOAP) interface that allows developers to create gateway clients and that administrators use to manage VTA subscribers and sessions. The SRC Web Services Gateway allows a gateway client—an application that is not part of the SRC network—to interact with SRC components, such as the VTA, through a SOAP interface.
Authorization and Accounting Applications	
AAA RADIUS servers	Authenticates subscribers and authorizes their access to the requested system or service. Accepts accounting data—time active and volume of data sent—about subscriber and service sessions. RADIUS servers run on a system other than a C Series Controller.
SRC Admission Control Plug-In (SRC ACP)	Authorizes and tracks subscribers' use of network resources associated with services that the SRC application manages.
Flat file accounting	Stores tracking data to accounting flat files that can be made available to external systems that send the data to a rating and billing system.
Volume Tracking Application	<p>The SRC Volume Tracking Application (SRC VTA) is an SRC component that allows service providers to track and control the network usage of subscribers and services. You can control volume and time usage on a per-subscriber or per-service basis. This level of control means that service providers can offer tiered services that use volume as a metric, while also controlling abusive subscribers and applications.</p> <p>When a subscriber or service exceeds bandwidth limits (or quotas), the SRC VTA can take actions including imposing rate limits on traffic, sending an e-mail notification, or charging extra for additional bandwidth consumed.</p>
Demonstration Applications (available on the Juniper Networks Web site)	
Enterprise Audit Plug-In	Defines a callback interface, which receives events when IT managers complete specified operations.
Enterprise Manager Portal	<p>Allows service providers to provision services for enterprise subscribers on routers running JunosE or Junos OS and allows IT managers to manage services.</p> <p>Enterprise Manager Portal can be used with NAT Address Management Portal to allow service providers to manage public IP addresses for use with NAT services on routers running Junos OS and to allow IT managers to make requests about public IP addresses through the Enterprise Manager Portal.</p>

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

Component	Description
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

Services with Diameter on MX Series Routers

- [Overview of SRC Peer Support on MX Series Routers on page 9](#)

Overview of SRC Peer Support on MX Series Routers

When the Juniper Networks routing platform supports the use of the Diameter protocol to provide extended AAA functionality, the SRC software can dynamically manage services on these devices. The SRC software uses the Diameter protocol for communications between the local SRC peer on a Juniper Networks routing platform, such as the Juniper Networks MX Series Ethernet Services Router, and the SAE. The local SRC peer is known as JSRC and is part of the AAA application.

JSRC has the following responsibilities:

- Request address authorization from the SAE.
- Request service activations from the SAE.
- Activate and deactivate services as specified by the SAE.
- Log out subscribers as specified by the SAE.
- Update the SAE with status of new service activations and deactivations.
- Synchronize subscriber state and service information with the SAE.
- Notify the SAE when subscribers log out.

The SRC software enables the SAE to activate and deactivate subscriber services and log out subscribers. The SAE can control only those resources that have been provisioned through the SAE. Therefore, the SAE receives information about only those subscribers for whom JSRC has requested provisioning from the SAE. Similarly, the SAE can control only the subscriber services that it has activated.

Related Documentation

- [Managing Services on MX Series Routers Using the Diameter Application on page 15](#)
- [Configuring JSRC on the MX Series Router on page 16](#)
- [Configuring the SAE to Manage Network Devices \(SRC CLI\) on page 24](#)
- [Configuring Diameter Peers \(SRC CLI\) on page 22](#)

CHAPTER 3

Subscriber Sessions on MX Series Routers

- [Overview of Subscriber Sessions on MX Series Routers on page 11](#)

Overview of Subscriber Sessions on MX Series Routers

The SRC software can manage subscriber sessions on MX Series routers. Common types of subscriber sessions on MX Series routers include:

- One interface subscriber session for each statically configured VLAN.
- One address subscriber session for each DHCP address.

You can manage subscriber sessions with the External Subscriber Monitor application and the COA script service. You can use External Subscriber Monitor to authorize access requests from the MX Series router and to log in or log out authorized subscribers. You can use the pseudo-RADIUS authorization server in External Subscriber Monitor to limit the number of DHCP leases for a subscriber by specifying the interface-name attribute in the subscriber profile and then setting a parameter substitution for the dhcpLeaseLimit parameter for that interface. You can configure the COA script service to dynamically activate or deactivate services on the MX Series router. This method uses RADIUS attributes and RADIUS vendor-specific attributes (VSAs) to identify a subscriber session whose services are to be activated or deactivated.

Related Documentation

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Setting Up MX Series Routers in the SRC Network \(SRC CLI\) on page 41](#)

PART 2

Configuration

- [Configuration Tasks for the Diameter Application on page 15](#)
- [Configuration Tasks for Managing Subscriber Sessions on page 29](#)
- [Configuration Statements and Commands on page 45](#)

CHAPTER 4

Configuration Tasks for the Diameter Application

- [Managing Services on MX Series Routers Using the Diameter Application on page 15](#)
- [Configuring JSRC on the MX Series Router on page 16](#)
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
- [Adding Network Devices \(SRC CLI\) on page 21](#)
- [Configuring Diameter Peers \(SRC CLI\) on page 22](#)
- [Configuring the SAE to Manage Network Devices \(SRC CLI\) on page 24](#)
- [Configuring JSRC Policies \(SRC CLI\) on page 26](#)

Managing Services on MX Series Routers Using the Diameter Application

You can use the SRC software to manage services on Juniper Networks routing platforms using the Diameter protocol. The SRC software communicates with the local SRC peer on the device using Diameter messages to dynamically manage services for a subscriber session.

The SRC software includes a Diameter server that forwards AAR, ACR, SRQ, and STR messages from JSRC to the device driver in the SAE and that forwards PPR and ASR messages from the device driver to JSRC. These Diameter messages perform these functions:

- AA-Request (AAR)—Attach subscriber to access network
- Accounting-Request (ACR)—Provide accounting information
- Abort-Session-Request (ASR)—Disconnect subscriber
- Push-Profile-Request (PPR)—Start, modify, or stop service session
- Session-Resource-Query (SRQ)—Initiate synchronization
- Session-Termination-Request (STR)—Detach subscriber from access network

You configure the Diameter peers and a device for each device managed by the SAE. The Diameter server searches all devices of type junos-ise for virtual routers that include the local host in their SAE connections. For these devices, the Diameter server establishes a connection with the peers referenced in the device configuration.

Tasks to set up the management of services on devices using Diameter protocol:

- [Configuring JSRC on the MX Series Router on page 16](#)
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
- [Adding Network Devices \(SRC CLI\) on page 21](#)
- [Configuring Diameter Peers \(SRC CLI\) on page 22](#)
- [Configuring the SAE to Manage Network Devices \(SRC CLI\) on page 24](#)
- [Configuring JSRC Policies \(SRC CLI\) on page 26](#)

Configuring JSRC on the MX Series Router

Tasks to set up JSRC on the Juniper Networks routing platform are:

1. Configure the Diameter instance.
See [“Configuring the Diameter Application \(SRC CLI\)” on page 16](#).
2. Set up the MX Series router so that it can be managed by the SAE.
See [“Adding Network Devices \(SRC CLI\)” on page 21](#)
3. Configure the Diameter peer.
See [“Configuring Diameter Peers \(SRC CLI\)” on page 22](#).
4. Configure the SAE to manage the MX Series router.
See [“Configuring the SAE to Manage Network Devices \(SRC CLI\)” on page 24](#).
5. Configure JSRC policies.
See [“Configuring JSRC Policies \(SRC CLI\)” on page 26](#).

For more information about JSRC and subscriber access, see the [Junos OS Subscriber Access Configuration Guide](#).

Configuring the Diameter Application (SRC CLI)

Tasks to configure the Diameter application are:

- [Configuring the Diameter Application Properties on page 16](#)
- [Configuring the Diameter Client Properties on page 20](#)
- [Configuring the Diameter Server Properties on page 20](#)
- [Configuring Logging Destinations on page 21](#)

Configuring the Diameter Application Properties

Use the following configuration statements to configure the properties for the Diameter application:

```
system diameter {  
  java-heap-size java-heap-size;
```

```

java-new-size java-new-size;
java-garbage-collection-options java-garbage-collection-options;
protocol [(tcp | sctp)...];
local-address [local-address...];
port port;
origin-host origin-host;
origin-realm origin-realm;
active-peers;
debug-mode;
load-balancing-mode (failover | round-robin);
transaction-processing-log (log-no-messages | log-severe-messages |
    log-normal-messages | log-debug-messages);
packet-trace-log (log-no-messages | log-severe-messages | log-normal-messages |
    log-debug-messages);
peer-state-machine-log (log-no-messages | log-severe-messages | log-normal-messages
    | log-debug-messages);
configuration-log (log-no-messages | log-severe-messages | log-normal-messages |
    log-debug-messages);
}

```

To configure the Diameter application:

1. From configuration mode, access the statement for the Diameter application.

```
user@host# edit system diameter
```



NOTE: The java-* options have default values that should not be changed unless directed by Juniper Networks Technical Assistance Center (JTAC).

2. If you encounter problems caused by lack of memory, change the maximum memory size available to the JRE.

```
[edit system diameter]
user@host# set java-heap-size java-heap-size
```

3. Configure the amount of space available to the JRE when the Diameter server starts.

```
[edit system diameter]
user@host# set java-new-size java-new-size
```

4. Configure the garbage collection functionality of the Java Virtual Machine.

```
[edit system diameter]
user@host# set java-garbage-collection-options java-garbage-collection-options
```

5. Specify the protocol for the transport connection.

```
[edit system diameter]
user@host# set protocol [(tcp | sctp)...]
```

6. (Optional) Specify the local IP addresses that remote peers can use to reach this server.

```
[edit system diameter]
```

```
user@host# set local-address [local-address...]
```

7. (Optional) Specify the port for the server.

```
[edit system diameter]  
user@host# set port port
```

8. (Optional) Specify the fully qualified domain name (FQDN) used to identify this host to its Diameter peers.

```
[edit system diameter]  
user@host# set origin-host origin-host
```

9. (Optional) Specify the realm used to identify this host to its Diameter peers.

```
[edit system diameter]  
user@host# set origin-realm origin-realm
```

The Diameter realm should be configured to the domain name of the origin host. For example, if the FQDN of the host is host.juniper.net, then the realm should be juniper.net. For PTSP, realm-based Diameter routing is not used.

10. (Optional) Specify whether the peer connection is in active mode.

```
[edit system diameter]  
user@host# set active-peers
```



NOTE: Active mode means that the SRC software actively tries to connect to the peer. Make sure the peer you are connecting to supports active peers. The MX Series router does not support active peers. The SRC software can still be configured, but the connection attempts will not work.

11. (Optional) Specify whether the peer connection is in debug mode.

```
[edit system diameter]  
user@host# set debug-mode
```

12. (Optional) Configure the load-balancing mode for peer selection when forwarding a request message.

```
[edit system diameter]  
user@host# set load-balancing-mode (failover | round-robin)
```

13. (Optional) Configure the log level for the transaction processing log.

```
[edit system diameter]  
user@host# set transaction-processing-log log-level
```

where *log-level* is one of the following:

- **log-no-messages**—Do not log any messages.
- **log-severe-messages**—Log only severe messages.
- **log-normal-messages**—Log only normal messages.
- **log-debug-messages**—Log only debug messages.

14. (Optional) Configure the log level for the packet tracing log.

```
[edit system diameter]
user@host# set packet-trace-log log-level
```

where *log-level* is one of the following:

- **log-no-messages**—Do not log any messages.
- **log-severe-messages**—Log only severe messages.
- **log-normal-messages**—Log only normal messages.
- **log-debug-messages**—Log only debug messages.

15. (Optional) Configure the log level for the peer state machine log.

```
[edit system diameter]
user@host# set peer-state-machine-log log-level
```

where *log-level* is one of the following:

- **log-no-messages**—Do not log any messages.
- **log-severe-messages**—Log only severe messages.
- **log-normal-messages**—Log only normal messages.
- **log-debug-messages**—Log only debug messages.

16. (Optional) Configure the log level for the configuration log.

```
[edit system diameter]
user@host# set configuration-log log-level
```

where *log-level* is one of the following:

- **log-no-messages**—Do not log any messages.
- **log-severe-messages**—Log only severe messages.
- **log-normal-messages**—Log only normal messages.
- **log-debug-messages**—Log only debug messages.

Configuring the Diameter Client Properties

This procedure configures the client-side adapter of the SRC Diameter server, which handles client connections. Configuration should be necessary only if you encounter performance problems.

Use the following statements to configure the properties for the Diameter client:

```
system diameter client {  
    threads threads;  
    keep-alive-time keep-alive-time;  
}
```

To configure the Diameter client properties:

1. From configuration mode, access the statement for the Diameter client.

```
user@host# edit system diameter client
```

2. (Optional) Specify the number of threads to use.

```
[edit system diameter client]  
user@host# set threads threads
```

3. (Optional) Specify the time to wait for new commands.

```
[edit system diameter client]  
user@host# set keep-alive-time keep-alive-time
```

Configuring the Diameter Server Properties

Use the following statements to configure the properties for the Diameter server:

```
system diameter server {  
    threads threads;  
    keep-alive-time keep-alive-time;  
}
```

To configure the Diameter server properties:

1. From configuration mode, access the statement for the Diameter server.

```
user@host# edit system diameter server
```

2. (Optional) Specify the minimum number of threads to use.

```
[edit system diameter server]  
user@host# set threads threads
```

3. (Optional) Specify the time to wait for new commands.

```
[edit system diameter server]  
user@host# set keep-alive-time keep-alive-time
```


Configuring Logging Destinations

Use the following configuration statements to configure logging destinations for Diameter:

```
system diameter logger name ...  
  
system diameter logger name file {  
    filter filter;  
    filename filename;  
    rollover-filename rollover-filename;  
    maximum-file-size maximum-file-size;  
}
```

To configure logging destinations to store log messages in a file:

1. From configuration mode, access the statement that configures the name and type of logging destination.

```
user@host# edit system diameter logger name file
```

2. Specify the properties for the logging destination.

```
[edit system diameter logger name file]  
user@host# set ?
```

For more information about configuring properties for the logging destination, see [Configuring Logging Destinations to Store Messages in a File \(SRC CLI\)](#).

Related Documentation

- [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)
- To manage services for JSRC peers on MX Series routers, see [Managing Services on MX Series Routers Using the Diameter Application on page 15](#).
- To manage policies for PTSP peers on MX Series routers, see [Configuring PTSP to Manage Subscriber-Level Policies](#).

Adding Network Devices (SRC CLI)

To set up the MX Series router so that it can be managed by the SAE:

1. From configuration mode, access the statements that configure network devices. You must specify the name of a device with lowercase characters. The name must match the Origin-Host AVP for the Diameter instance on the device. This sample procedure uses `mx1` as the name of the router.

```
user@host# edit shared network device mx1
```

2. Set the type of device to `junos-ise`.

```
[edit shared network device mx1]  
user@host# set device-type junos-ise
```

3. Specify the configured peers associated with the device. See [“Configuring Diameter Peers \(SRC CLI\)” on page 22](#).

```
[edit shared network device mx1]
user@host# set peers [peers...]
```

Note that MX Series routers support only a single peer connection.

4. From configuration mode, access the statements for virtual routers. The name must match the JSRC partition configured on the MX Series router, which is configured within the logical system:routing instance context. This sample procedure uses the name `*` for the virtual router.

```
[edit shared network device mx1]
user@host# edit virtual-router *
```

where `*` matches any JSRC partition. You can also specify that the JSRC partition be configured in a logical system or in a logical system and routing instance. By default, logical system **default** and routing instance **master** are used.

5. Specify the SAEs that can manage this router.

```
[edit shared network device mx1 virtual-router default]
user@host# set sae-connection [sae-connection...]
```

6. (Optional) Specify the VPN identifier used by this virtual router. You can specify VRF instead of a string to use the VRF instance reported by the device as the VPN identifier. In this case, the VPN identifier is the name of the routing instance.

```
[edit shared network device mx1 virtual-router default]
user@host# set vpn-id (vpn-id | VRF)
```

7. (Optional) Verify your configuration.

```
[edit shared network device mx1]
user@host# show
```

- Related Documentation**
- [Configuring the SAE to Manage Network Devices \(SRC CLI\) on page 24](#)
 - [Configuring JSRC on the MX Series Router on page 16](#)

Configuring Diameter Peers (SRC CLI)

Use the following configuration statements to configure the Diameter peers:

```
shared network diameter peer name {
  protocol [(tcp | sctp)...];
  address [address...];
  enforce-source-address;
  local-address local-address;
  connect-timeout connect-timeout;
  watchdog-timeout watchdog-timeout;
  state-machine-timeout state-machine-timeout;
  reconnect-timeout reconnect-timeout;
```

```
port port;  
origin-host origin-host;  
incoming-queue-limit incoming-queue-limit;  
active-peer;  
}
```

To configure the Diameter peer:

1. From configuration mode, access the statements for the peer.

```
user@host# edit shared network diameter peer name
```

The peer name must be unique.

2. Specify the protocol for the transport connection.

```
[edit shared network diameter peer name]  
user@host# set protocol [(tcp | sctp)...
```

3. Specify the addresses of the remote peer. If SCTP is the transport protocol, you can specify multiple addresses. If TCP is the transport protocol, you can specify only a single address.

```
[edit shared network diameter peer name]  
user@host# set address [address...
```

4. (Optional) Specify whether the remote peer must connect from one of the IP addresses listed by the **address** option.

```
[edit shared network diameter peer name]  
user@host# set enforce-source-address
```

5. (Optional) Specify the local address of the peer.

```
[edit shared network diameter peer name]  
user@host# set local-address local-address
```

6. (Optional) Specify the maximum amount of time allowed for the Diameter peer to respond to a connection request.

```
[edit shared network diameter peer name]  
user@host# set connect-timeout connect-timeout
```

7. (Optional) Specify the watchdog timeout used for the connection to the remote peer.

```
[edit shared network diameter peer name]  
user@host# set watchdog-timeout watchdog-timeout
```

8. (Optional) Specify the Diameter state machine timeout.

```
[edit shared network diameter peer name]  
user@host# set state-machine-timeout state-machine-timeout
```

9. (Optional) Specify the time interval between connection attempts when the peer is in the disconnected state.

```
[edit shared network diameter peer name]  
user@host# set reconnect-timeout reconnect-timeout
```

10. (Optional) Specify the port for the client.

```
[edit shared network diameter peer name]  
user@host# set port port
```

11. (Optional) Specify the identifier for the endpoint that the peer presents during connection establishment.

```
[edit shared network diameter peer name]  
user@host# set origin-host origin-host
```

12. (Optional) Specify the number of messages allowed on the incoming message queue for a peer.

```
[edit shared network diameter peer name]  
user@host# set incoming-queue-limit incoming-queue-limit
```

13. (Optional) Specify whether the peer connection is in active mode.

```
[edit shared network diameter peer name]  
user@host# set active-peer
```



NOTE: Active mode means that the SRC software actively tries to connect to the peer. Make sure the peer you are connecting to supports active peers. The MX Series router does not support active peers. The SRC software can still be configured, but the connection attempts will not work.

- Related Documentation**
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
 - [Viewing SRC Diameter Server State \(SRC CLI\) on page 51](#)

Configuring the SAE to Manage Network Devices (SRC CLI)

Use the following configuration statements to configure the device driver for MX Series routers:

```
shared sae configuration driver junos-ise {  
  sae-community-manager sae-community-manager;  
  cached-driver-expiration cached-driver-expiration;  
  keep-alive-timeout keep-alive-timeout;  
  registry-retry-interval registry-retry-interval;  
  reply-timeout reply-timeout;  
  sequential-message-timeout sequential-message-timeout;  
  thread-pool-size thread-pool-size;  
  thread-idle-timeout thread-idle-timeout;  
}
```

To configure the device driver:

1. From configuration mode, access the statements for the device driver.

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

2. Specify the name of the community manager.

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

3. (Optional) Specify the minimum amount of time to keep the state of a device driver after its Diameter connection is closed.

```
[edit shared sae configuration driver junos-ise]
user@host# set cached-driver-expiration cached-driver-expiration
```

4. (Optional) Specify the keepalive timeout before the registry to a Diameter server expires.

```
[edit shared sae configuration driver junos-ise]
user@host# set keep-alive-timeout keep-alive-timeout
```

5. (Optional) Specify the interval between retrying a failed registry to a Diameter server.

```
[edit shared sae configuration driver junos-ise]
user@host# set registry-retry-interval registry-retry-interval
```

6. (Optional) Specify the timeout before a request sent to a Diameter server expires.

```
[edit shared sae configuration driver junos-ise]
user@host# set reply-timeout reply-timeout
```

7. (Optional) Specify the timeout before an expected message expires.

```
[edit shared sae configuration driver junos-ise]
user@host# set sequential-message-timeout sequential-message-timeout
```

8. (Optional) Specify the number of working threads that process requests.

```
[edit shared sae configuration driver junos-ise]
user@host# set thread-pool-size thread-pool-size
```

9. (Optional) Specify the timeout for stopping working threads after they become idle.

```
[edit shared sae configuration driver junos-ise]
user@host# set thread-idle-timeout thread-idle-timeout
```

10. (Optional) Configure the session store parameters for the device driver.

From configuration mode, access the statement that configures the session store for the device driver.

```
user@host# edit shared sae configuration driver junos-ise session-store
```

For more information about configuring session store parameters, see [Configuring the Session Store Feature \(SRC CLI\)](#).

Related Documentation

- [Adding Network Devices \(SRC CLI\) on page 21](#)
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)

- [Configuring Local Properties for the SAE \(SRC CLI\)](#)
- [Overview of SRC Peer Support on MX Series Routers on page 9](#)

Configuring JSRC Policies (SRC CLI)

Tasks to configure JSRC policies are:

- [Configuring JSRC Policy Lists on page 26](#)
- [Configuring JSRC Policy Rules on page 26](#)
- [Configuring Dynamic Profile Actions on page 26](#)

Configuring JSRC Policy Lists

To configure policy lists:

1. From configuration mode, create a policy list. For example, to create a policy list called l1 within a policy group called ise:

```
user@host# edit policies group ise list l1
```

2. Specify the type of policy list.

```
[edit policies group ise list l1]  
user@host# set role junos-ise
```

3. Specify where the policy is applied on the device.

```
[edit policies group ise list l1]  
user@host# set applicability both
```

Configuring JSRC Policy Rules

To configure policy rules:

1. From configuration mode, create a policy rule inside a policy list that has already been created and configured. For example, to create a policy rule called r1 within policy list l1:

```
user@host# edit policies group ise list l1 rule r1
```

2. Specify the type of policy rule.

```
[edit policies group ise list l1 rule r1]  
user@host# set type junos-ise
```

Configuring Dynamic Profile Actions

Use this action to install existing dynamic profiles. You can configure dynamic profile actions for devices such as the MX Series routers.

The profile name must match a dynamic profile configured on the device and the variable name must match a variable configured for the dynamic profile.

Use the following configuration statements to configure a dynamic profile action:

```

policies group name list name rule name dynamic-profile name {
  profile-name profile-name;
  description description;
}

policies group name list name rule name dynamic-profile name variables name {
  value value;
  type type;
}

```

To configure a dynamic profile action:

1. From configuration mode, enter the dynamic profile action configuration. In this sample procedure, dp is the name of the dynamic profile action.

```
user@host# edit policies group ise list l1 rule r1 dynamic-profile dp
```

2. Enter the profile name to activate.

```
[edit policies group ise list l1 rule r1 dynamic-profile dp]
user@host# set profile-name profile-name
```

3. (Optional) Enter a description for the dynamic profile action.

```
[edit policies group ise list l1 rule r1 dynamic-profile dp]
user@host# set description description
```

4. From configuration mode, enter the parameters used by the profile.

```
user@host# edit policies group ise list l1 rule r1 dynamic-profile dp variables name
```

For example:

```
user@host# edit policies group ise list l1 rule r1 dynamic-profile dp variables
upstreamBandwidth
```

5. (Optional) Configure the value for the variable.

```
[edit policies group ise list l1 rule r1 dynamic-profile dp variables name]
user@host# set value value
```

For example:

```
[edit policies group ise list l1 rule r1 dynamic-profile dp variables upstreamBandwidth]
user@host# set value rateParameter
```

6. (Optional) Configure the variable type. Variable types are mapped to parameter types.

```
[edit policies group ise list l1 rule r1 dynamic-profile dp variables name]
user@host# set type type
```

For example:

```
[edit policies group ise list l1 rule r1 dynamic-profile dp variables upstreamBandwidth]
user@host# set type rate
```


CHAPTER 5

Configuration Tasks for Managing Subscriber Sessions

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring Pseudo-RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
- [Configuring the NIC Proxy for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 35](#)
- [Extracting RADIUS Attributes with the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 38](#)
- [Enabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)
- [Disabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)
- [Setting Up MX Series Routers in the SRC Network \(SRC CLI\) on page 41](#)
- [Configuring the COA Script Service for MX Series Routers \(SRC CLI\) on page 41](#)
- [Configuring Parameters for the Script Service for MX Series Routers \(SRC CLI\) on page 42](#)
- [Configuring Subscriptions to the Script Service on page 44](#)

Configuring External Subscriber Monitor (SRC CLI)

Use External Subscriber Monitor to log in and log out authorized subscribers and to provide interim updates for authorized subscribers.

To configure External Subscriber Monitor as a pseudo-RADIUS accounting server:

1. From configuration mode, access the configuration statement that configures the local properties.

```
user@host# edit slot 0 external-subscriber-monitor
```

2. Configure the local properties for External Subscriber Monitor.

If you are configuring the pseudo-RADIUS authorization server, specify the **include-mac-address** and **include-interface-name** options when configuring External Subscriber Monitor so that the MAC address and interface name attributes are included in the event notifications sent to the SAE.

```
[edit slot 0 external-subscriber-monitor]  
user@host# set ?
```

For more information about configuring External Subscriber Monitor, see [Configuring External Subscriber Monitor \(SRC CLI\)](#).

- Related Documentation**
- [Configuring Pseudo–RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
 - [Configuring the NIC Proxy for the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 35](#)
 - [Extracting RADIUS Attributes with the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 38](#)
 - [Setting Up MX Series Routers in the SRC Network \(SRC CLI\) on page 41](#)

Configuring Pseudo–RADIUS Authorization Server Properties (SRC CLI)

Tasks to configure the pseudo–RADIUS authorization server are:

- [Configuring the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 30](#)
- [Configuring the Directory Connection Properties for the Subscriber Data on page 32](#)
- [Configuring Directory Connection Properties for the Cached DHCP Profiles on page 33](#)

Configuring the Pseudo–RADIUS Authorization Server (SRC CLI)

Use the following configuration statements to configure the pseudo–RADIUS authorization server:

```
slot number external-subscriber-monitor radius-authorization {  
    port port;  
    local-address local-address;  
    check-lease-limit-with-sae;  
    query-cached-dhcp-profile;  
    default-lease-limit default-lease-limit;  
    invalid-pool-name invalid-pool-name;  
    lease-time-limit lease-time-limit;  
    cleanup-interval cleanup-interval;  
    maximum-age maximum-age;  
    minimum-pool-size minimum-pool-size;  
    maximum-queue-length maximum-queue-length;  
    service-type (all | login | framed | callback-login | callback-framed | outbound |  
        administrative | nas-prompt | authenticate-only | callback-nas-prompt | callback-check  
        | callback-administrative);  
}  
slot number external-subscriber-monitor radius-authorization client client-address {  
    secret secret;  
}
```

To configure the pseudo–RADIUS authorization server:

1. From configuration mode, access the configuration statement that configures the pseudo–RADIUS authorization server.

```
user@host# edit slot 0 external-subscriber-monitor radius-authorization
```

2. Specify the listening port for RADIUS requests.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set port port
```

3. (Optional) Specify the host address to bind to the pseudo-RADIUS authorization server. Absence (or deletion) of this attribute means binding it to a wildcard (*) address.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set local-address local-address
```

4. (Optional) Specify whether to query the SAE for the number of active subscribers for a given interface. If set to true, the response to the RADIUS access request depends on the comparison between the number of active subscriber sessions and the lease limit for the interface. If the number of active subscriber sessions is less than the lease limit, the response is the RADIUS access accept message without the lease limit RADIUS attribute; otherwise, the response is the RADIUS access accept message where the subscriber is not assigned an address. If set to false, the response is the RADIUS access accept message with the lease limit RADIUS attribute. If the lease limit RADIUS vendor-specific attribute is returned, the MX Series router verifies the lease limit.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set check-lease-limit-with-sae
```

5. (Optional) Specify whether to search for a cached DHCP profile in the o=AuthCache directory based on the MAC address. If set to true, you must configure a directory connection to the cached DHCP profiles.

If set to true, the following conditions apply:

- If a cached DHCP profile is found, the RADIUS response message includes the RADIUS attribute values for framed IP address, pool name, service bundle, and RADIUS class attributes that are present in the cached DHCP profile.
- If the **check-lease-limit-with-sae** option is set to true and the number of active subscriber sessions is less than the lease limit, the RADIUS access accept message includes the cached DHCP profile.
- If the **check-lease-limit-with-sae** option is set to false, the RADIUS response includes the lease limit.

If set to false, the RADIUS response message does not include the cached DHCP profile information.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set query-cached-dhcp-profile
```

6. (Optional) Specify the default lease limit for all interfaces.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set default-lease-limit default-lease-limit
```

7. Specify the invalid pool name returned when the number of active subscriber sessions exceeds the lease limit.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set invalid-pool-name invalid-pool-name
```

8. (Optional) Specify the timeout of a cached authenticated request.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set lease-time-limit lease-time-limit
```

9. Specify the amount of time to wait before cleaning up cached RADIUS access requests that have been accepted.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set cleanup-interval cleanup-interval
```

10. Specify the maximum age of an unacknowledged RADIUS access request cached in memory. We recommend a value slightly greater than the RADIUS packets retry interval.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set maximum-age maximum-age
```

11. Specify the minimum number of concurrent threads processing RADIUS access messages subtasks.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set minimum-pool-size minimum-pool-size
```

12. Specify the maximum number of unacknowledged RADIUS messages to be received from the RADIUS server before it discards new messages.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set maximum-queue-length maximum-queue-length
```

13. Specify the service type of the RADIUS packets that will be forwarded.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# set service-type service-type
```

14. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# show
```

15. Access the configuration statement that specifies the trusted RADIUS clients.

```
[edit slot 0 external-subscriber-monitor radius-authorization]
user@host# edit client client-address
[edit slot 0 external-subscriber-monitor radius-authorization client client-address]
```

16. Specify the RADIUS shared secret for the client.

```
[edit slot 0 external-subscriber-monitor radius-authorization client client-address]
user@host# set secret secret
```

Configuring the Directory Connection Properties for the Subscriber Data

The subscriber data can be queried for information such as the interface's lease limit.

Use the following statements to configure the directory connection to the directory in which the subscriber data is stored:

```
slot number external-subscriber-monitor radius-authorization ldap subscriber-data {
  base base;
  base-dn base-dn;
```

```

}
slot number external-subscriber-monitor radius-authorization ldap subscriber-data
  directory-connection {
    url url;
    principal principal;
    credentials credentials;
    protocol (ldaps);
    backup-urls [backup-urls...];
    timeout timeout;
    check-interval check-interval;
    blacklist;
    snmp-agent;
    signature-dn signature-dn;
  }

```

To configure directory connection properties:

1. From configuration mode, access the configuration statement that configures the directory connection.

```

user@host# edit slot 0 external-subscriber-monitor radius-authorization ldap
subscriber-data

```

2. Specify the top-level directory DN.

```

[edit slot 0 external-subscriber-monitor radius-authorization ldap subscriber-data]
user@host# set base base

```

3. Specify the subtree in the directory in which the subscriber data is stored.

```

[edit slot 0 external-subscriber-monitor radius-authorization ldap subscriber-data]
user@host# set base-dn base-dn

```

4. Access the configuration statement that configures the directory connection properties.

```

[edit slot 0 external-subscriber-monitor radius-authorization ldap subscriber-data]
user@host# edit directory-connection

```

5. Specify the directory connection properties for the subscriber data.

```

[edit slot 0 external-subscriber-monitor radius-authorization ldap subscriber-data
directory-connection]
user@host# set ?

```

6. (Optional) Verify your configuration.

```

[edit slot 0 external-subscriber-monitor radius-authorization ldap subscriber-data]
user@host# show

```

Configuring Directory Connection Properties for the Cached DHCP Profiles

The DHCP profiles can be queried by MAC address for the RADIUS framed IP address for authorized subscribers or invalid pool name for unauthorized subscribers.

Use the following statements to configure the directory connection to the directory in which the cached DHCP profiles are stored:

```

slot number external-subscriber-monitor radius-authorization ldap cached-dhcp-profile
{
  base base;

```

```
    base-dn base-dn;  
  }  
slot number external-subscriber-monitor radius-authorization ldap cached-dhcp-profile  
  directory-connection {  
    url url;  
    principal principal;  
    credentials credentials;  
    protocol (ldaps);  
    backup-urls [backup-urls...];  
    timeout timeout;  
    check-interval check-interval;  
    blacklist;  
    snmp-agent;  
    signature-dn signature-dn;  
  }
```

To configure directory connection properties:

1. From configuration mode, access the configuration statement that configures the directory connection.

```
user@host# edit slot 0 external-subscriber-monitor radius-authorization ldap  
cached-dhcp-profile
```

2. Specify the top-level directory DN.

```
[edit slot 0 external-subscriber-monitor radius-authorization ldap cached-dhcp-profile]  
user@host# set base base
```

3. Specify the subtree in the directory in which the cached DHCP profiles are stored.

```
[edit slot 0 external-subscriber-monitor radius-authorization ldap cached-dhcp-profile]  
user@host# set base-dn base-dn
```

4. Access the configuration statement that configures the directory connection properties.

```
[edit slot 0 external-subscriber-monitor radius-authorization ldap cached-dhcp-profile]  
user@host# edit directory-connection
```

5. Specify the directory connection properties for the cached DHCP profiles.

```
[edit slot 0 external-subscriber-monitor radius-authorization ldap cached-dhcp-profile  
directory-connection]  
user@host# set ?
```

6. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor radius-authorization ldap cached-dhcp-profile]  
user@host# show
```

Related Documentation

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring the NIC Proxy for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 35](#)
- [Extracting RADIUS Attributes with the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 38](#)
- [Enabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)
- [Viewing Statistics for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 49](#)

- [Monitoring Statistics for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 51](#)

Configuring the NIC Proxy for the Pseudo-RADIUS Authorization Server (SRC CLI)

When the **check-lease-limit-with-sae** option is set to true, you must configure the NIC proxy so that the pseudo-RADIUS authorization server can find the SAE managing the interface and determine the number of subscriber sessions already established on the interface (that is, the number of leases on the interface). The NIC proxy must be configured for a NIC scenario that maps VRs to SAEs.

Tasks to configure the NIC proxy are:

- [Configuring Resolution Information for a NIC Proxy on page 35](#)
- [Changing the Configuration for the NIC Proxy Cache on page 35](#)
- [Configuring a NIC Proxy for NIC Replication on page 36](#)

Configuring Resolution Information for a NIC Proxy

Use the following configuration statements to configure the NIC proxy:

```
slot number external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
  resolution {
    resolver-name resolver-name;
    constraints constraints;
  }
```

To configure resolution information for a NIC proxy:

1. From configuration mode, access the configuration statement that configures the NIC proxy configuration. In this sample procedure, the NIC proxy called radius-authorization-nic is configured.

```
user@host# edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic resolution
```

2. Specify the resolution information for this NIC proxy.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
resolution]
user@host# set ?
```

For more information about configuring resolution information for a NIC proxy, see [Configuring Resolution Information for a NIC Proxy \(SRC CLI\)](#).

3. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
resolution]
user@host# show
```

Changing the Configuration for the NIC Proxy Cache

You can modify cache properties for the NIC proxy to optimize the resolution performance for your network configuration and system resources. Typically, you can use the default

settings for the cache properties. The configuration statements are available at the Advanced editing level.

Use the following configuration statements to change values for the NIC proxy cache:

```
slot number external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
  cache {
    cache-size cache-size;
    cache-cleanup-interval cache-cleanup-interval;
    cache-entry-age cache-entry-age;
  }
```

To configure the cache for a NIC proxy:

1. From configuration mode, access the configuration statement that specifies the NIC proxy configuration. In this sample procedure, the NIC proxy called radius-authorization-nic is configured.

```
user@host# edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic cache
```

2. Specify the cache properties for the NIC proxy.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
cache]
user@host# set ?
```

For more information about configuring the cache for a NIC proxy, see [Changing the Configuration for the NIC Proxy Cache \(SRC CLI\)](#).

3. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic cache]
user@host# show
cache-size 10000;
cache-cleanup-interval 15;
```

Configuring a NIC Proxy for NIC Replication

Typically, you configure NIC replication to keep the NIC highly available. You configure NIC host selection to specify the groups of NIC hosts to be contacted to resolve a request, and to define how the NIC proxy handles NIC hosts that the proxy is unable to contact. The configuration statements are available at the Advanced editing level.

Use the following configuration statements to configure NIC host selection for a NIC proxy:

```
slot number external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
  nic-host-selection {
    groups groups;
    selection-criteria (roundRobin | randomPick | priorityList);
  }
slot number external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
  nic-host-selection blacklisting {
    try-next-system-on-error;
    number-of-retries-before-blacklisting number-of-retries-before-blacklisting;
    blacklist-retry-interval blacklist-retry-interval;
```



```
}

```

To configure a NIC proxy to use NIC replication:

1. From configuration mode, access the configuration statement that specifies the NIC proxy configuration. In this sample procedure, the NIC proxy called radius-authorization-nic is configured.

```
user@host# edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic nic-host-selection

```

2. (Optional) Configure NIC host selection for a NIC proxy.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
nic-host-selection]
user@host# set ?

```

For more information about configuring NIC host selection for a NIC proxy, see [Configuring a NIC Proxy for NIC Replication \(SRC CLI\)](#).

3. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic nic-host-selection]
user@host# show
groups ;
selection-criteria roundRobin;

```

4. Access the configuration statement that specifies the NIC proxy configuration for blacklisting—the process of handling nonresponsive NIC hosts.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
nic-host-selection]
user@host# edit blacklisting
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
nic-host-selection blacklisting]

```

5. (Optional) Configure blacklisting for a NIC proxy.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration radius-authorization-nic
nic-host-selection blacklisting]
user@host# set ?

```

For more information about configuring NIC host selection for a NIC proxy, see [Configuring a NIC Proxy for NIC Replication \(SRC CLI\)](#).

6. (Optional) Verify your configuration.

```
[edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic nic-host-selection blacklisting]
user@host# show
[edit slot 0 external-subscriber-monitor nic-proxy-configuration
radius-authorization-nic nic-host-selection blacklisting]
user@host# show
try-next-system-on-error;
number-of-retries-before-blacklisting 3;
blacklist-retry-interval 15;

```

Related Documentation

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring Pseudo–RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)

- [Extracting RADIUS Attributes with the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 38](#)
- [Enabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)

Extracting RADIUS Attributes with the Pseudo-RADIUS Authorization Server (SRC CLI)

The pseudo-RADIUS authorization server extracts RADIUS attribute values from the MX Series router for which it receives access requests.

Tasks to configure the RADIUS attribute value extraction are:

- [Extracting Interface Name Attribute Values on page 38](#)
- [Extracting Virtual Router Name Attribute Values on page 39](#)

Extracting Interface Name Attribute Values

The interface name value is the subscriber line interface. This value is extracted from the NAS-Port-ID attribute. The default settings for this configuration are sufficient for most applications.

Use the following configuration statements to extract the interface name value from the RADIUS access request:

```
slot number external-subscriber-monitor radius-attribute-extraction default interface-name
{
    regular-expression [regular-expression...];
}
```

To extract the interface name value:

1. From configuration mode, access the configuration statement that configures RADIUS attribute extraction for the interface name value.

```
user@host# edit slot 0 external-subscriber-monitor radius-attribute-extraction default
interface-name
```

2. (Optional) Specify the RADIUS attribute value format with a regular expression. You can group regular expressions by enclosing them in parentheses. The value for the interface is the part of the NAS-Port-ID matched by the first group in your regular expression. For more information about using regular expressions, see <http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html>.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
interface-name]
user@host# set regular-expression [regular-expression...]
```

For example, to specify that the extracted interface name value is ge-0/0/3.0 from the NAS-Port attribute value of ge-0/0/3.0[0-0]:

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
interface-name]
user@host# set regular-expression ([a-zA-Z0-9-/.]+)\[[:.*
```

Extracting Virtual Router Name Attribute Values

In most cases, the virtual router name value is in the format `default@<NAS-ID attribute>`. The default settings extract a virtual router name in this format. If your environment is different, you can configure a different format for the extracted value.

Use the following configuration statements to extract the virtual router name value from the RADIUS access request:

```
slot number external-subscriber-monitor radius-attribute-extraction default
  virtual-router-name {
    id id;
    vsa;
    vsa-id vsa-id;
    regular-expression [regular-expression...];
    type (raw-byte | chars);
    prefix prefix;
  }
```

To extract the virtual router name value:

1. From configuration mode, access the configuration statement that configures RADIUS attribute extraction for the virtual router name value.

```
user@host# edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name
```

2. Specify the RADIUS attribute identifier.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name]
user@host# set id id
```

3. (Optional) Specify whether the RADIUS attribute is a vendor-specific attribute.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name]
user@host# set vsa
```

4. (Optional) Specify the RADIUS vendor-specific attribute identifier.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name]
user@host# set vsa-id vsa-id
```

5. (Optional) Specify the RADIUS attribute value format with a regular expression. You can group regular expressions by enclosing them in parentheses. The value for the interface is the part of the NAS-Port-ID matched by the first group in your regular expression. For more information about using regular expressions, see <http://java.sun.com/j2se/1.4.2/docs/api/java/util/regex/Pattern.html>.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name]
user@host# set regular-expression [regular-expression...]
```

For example:

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default
virtual-router-name]
```

```
user@host# set regular-expression ([a-zA-Z0-9-./]+)\[[:.*
```

6. (Optional) Specify the value type of this RADIUS attribute.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default  
virtual-router-name]  
user@host# set type (raw-byte | chars)
```

where:

- **raw-byte**—Raw bytes
- **chars**—Sequence of characters

7. (Optional) Specify the prefix that is prepended to the extracted RADIUS attribute value.

```
[edit slot 0 external-subscriber-monitor radius-attribute-extraction default  
virtual-router-name]  
user@host# set prefix prefix
```

**Related
Documentation**

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring Pseudo-RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
- [Configuring the NIC Proxy for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 35](#)
- [Enabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)

Enabling the Pseudo-RADIUS Authorization Server (SRC CLI)

To enable the pseudo-RADIUS authorization server, configure the pseudo-RADIUS authorization server and make sure the External Subscriber Monitor is running.

To start External Subscriber Monitor:

```
user@host> enable component extsubmon
```

**Related
Documentation**

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring Pseudo-RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
- [Disabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)
- [Viewing Statistics for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 49](#)
- [Monitoring Statistics for the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 51](#)

Disabling the Pseudo-RADIUS Authorization Server (SRC CLI)

To disable the pseudo-RADIUS authorization server, delete the pseudo-RADIUS authorization server configuration for External Subscriber Monitor from configuration mode.

```
[edit slot 0 external-subscriber-monitor]
```

```
user@host# delete radius-authorization
```

**Related
Documentation**

- [Enabling the Pseudo-RADIUS Authorization Server \(SRC CLI\) on page 40](#)

Setting Up MX Series Routers in the SRC Network (SRC CLI)

To set up the MX Series router so that the router can be managed by the SAE:

1. From configuration mode, access the configuration statement that configures network devices. This sample procedure uses `mx_device` as the name of the router.

```
user@host# edit slot 0 shared network device mx_device
```

2. Set the type of device to third-party.

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

3. From configuration mode, access the configuration statements for virtual routers. For MX Series routers, use the name `default` for the virtual router.

```
[edit shared network device mx_device]  
user@host# edit virtual-router default
```

4. Specify the addresses of SAEs that can manage this router.

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

**Related
Documentation**

- [Configuring External Subscriber Monitor \(SRC CLI\) on page 29](#)
- [Configuring Pseudo-RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
- [Configuring the COA Script Service for MX Series Routers \(SRC CLI\) on page 41](#)
- [Configuring Subscriptions to the Script Service on page 44](#)

Configuring the COA Script Service for MX Series Routers (SRC CLI)

To configure the script service for the MX Series router:

1. Create a script service in the services global service name hierarchy or the services scope name service name hierarchy. For example:

```
[edit]  
user@host# edit services global service cos-service
```

2. Set the type to script.

```
[edit services global service cos-service]  
user@host# set type script
```

3. (Optional) Configure other properties as needed for your service.
4. Configure the script properties.
 - a. Access the script hierarchy for the configured script service.

```
[edit services global service cos-service]
user@host# edit script
```

- b. Specify URL as the script type.

```
[edit services global service cos-service script]
user@host# set script-type url
```

- c. Specify the name of the Java class that implements the script service.

```
[edit services global service cos-service script]
user@host# set class-name net.juniper.smgmt.scriptServices.coa.CoaService
```

- d. Configure the URL of the script service or the path and filename of the service.

```
[edit services global service cos-service script]
user@host# set file file:///opt/UMC/sae/lib/coa.jar
```

If you specify a file URL, you must copy the file to the C Series Controller. If you specify an ftp or http URL, the file can reside on a centralized server. You can find the *coa.jar* file in the application and SDK distribution on the Juniper Networks Web site at:

<https://www.juniper.net/support/csc/swdist-erx/src.html>

in the *SDK+AppSupport+Demos+Samples.tar.gz* archive file with the pathname:

AppSupport+Demos+Samples/SDK/scriptServices/coa/lib/coa.jar

5. Verify the configuration.

```
[edit services global service cos-service script]
user@host# show
type script;
status active;
available;
script {
  script-type url;
  class-name net.juniper.smgmt.scriptServices.coa.CoaService;
  file file:///opt/UMC/sae/lib/coa.jar;
}
```

6. Configure the parameters for the script service.

See “Configuring Parameters for the Script Service for MX Series Routers (SRC CLI)” on page 42.

Related Documentation

- [Setting Up MX Series Routers in the SRC Network \(SRC CLI\) on page 41](#)
- [Configuring Parameters for the Script Service for MX Series Routers \(SRC CLI\) on page 42](#)
- [Configuring Subscriptions to the Script Service on page 44](#)

Configuring Parameters for the Script Service for MX Series Routers (SRC CLI)

Provide parameter substitutions with the values that are in the service definitions for the script service.

Table 5 on page 43 lists the parameters specified by the sample script service.

Table 5: Parameter Substitutions for MX Series Routers COA Services

Parameter Name	Description
dynClientIp	IP address of the device.
dynClientPort	UDP port number of the device.
dynServerIp	IP address of the C Series Controller.
dynServerPort	UDP port number of the C Series Controller.
dynSecret	Shared secret between RADIUS server and RADIUS client.
dynRetry	Number of retries for sending RADIUS packets when no RADIUS response is received. The retry interval is 3 seconds.
dynConfig	<p>Content of service definition in the format</p> <pre><action>.<radiusAttributeName>=<pluginEventAttribute>\n</pre> <ul style="list-style-type: none"> action—Action that is executed on packet content (attribute): <ul style="list-style-type: none"> start stop start-stop radiusAttributeName—Valid RADIUS attribute specified as follows: <ul style="list-style-type: none"> Standard RADIUS attribute name or number VSA in the format vendor-specific.<vendor#>.<vsa#>.string pluginEventAttribute—Valid Python expression \n—New-line character included between the lines of a configuration containing multiple lines; the entire configuration must be enclosed in quotation marks. <p>For example:</p> <pre>start-stop.Acct-Session-Id = ifSessionId "start-stop.Acct-Session-Id=ifSessionId\nstart.vendor-specific.4874.10.string='video'\nstop.vendor-specific.4874.10.string='default'\n"</pre>

To configure substitutions for the script parameters:

1. At the hierarchy for the script service, specify substitutions for the parameters. For example:

```
[edit services global service cos-service]
user@host# set parameter substitution [ dynSecret=\"secret\" dynRetry=2
dynClientIp=10.227.7.111 dynClientPort=9099
"dynConfig=\"start-stop.l.string=primaryUserName\nstart-stop.Acct-Session-id=ifSessionId
\nstart.vendor-specific.4874.108.string=['T01 3m', 'T04
consumer-scheduler-map']\nstop.vendor-specific.4874.108.string=['T011m', 'T04
```

```
data-scheduler-map']\\nstart.vendor-specific.4874.10.string='video'
\\nstop.vendor-specific.4874.10.string='default'\\n\\n" ]
```

2. Verify the configuration.

```
[edit services global service cos-service]
user@host# show
```

**Related
Documentation**

- [Configuring the COA Script Service for MX Series Routers \(SRC CLI\) on page 41](#)
- [Configuring Subscriptions to the Script Service on page 44](#)

Configuring Subscriptions to the Script Service

You need to configure subscriptions to the script service. You can set up the subscriptions to activate immediately on login.

For more information, see [Adding Subscribers \(SRC CLI\)](#).

**Related
Documentation**

- [Configuring the COA Script Service for MX Series Routers \(SRC CLI\) on page 41](#)
- [Configuring Parameters for the Script Service for MX Series Routers \(SRC CLI\) on page 42](#)

CHAPTER 6

Configuration Statements and Commands

- [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)

SRC CLI Commands to Monitor the SRC Diameter Server

You can view statistics and status for the SRC Diameter server. [Table 6 on page 45](#) lists the commands you use to monitor the SRC Diameter server

Table 6: Commands to Monitor the Diameter Server

Command	Output Displayed
<code>show diameter statistics</code>	Information about the server process and the current state of the Diameter server.
<code>show diameter statistics message-handler</code>	Information about the Diameter server message handler.
<code>show diameter statistics message-handler message-flow</code>	Information about the Diameter server message flows.
<code>show diameter statistics process</code>	Information about the Diameter server process.
<code>show diameter statistics requests</code>	Information about the Diameter server requests.
<code>show diameter status</code>	Status of the Diameter server.
<code>show diameter status clients</code>	Status of the Diameter clients.
<code>show diameter status peers</code>	Status of the Diameter peers.

Related Documentation

- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
- [Viewing Statistics for the SRC Diameter Server \(SRC CLI\) on page 49](#)
- [Viewing Message Handler Information for the SRC Diameter Server \(SRC CLI\) on page 50](#)
- [Viewing Server Process Information for the SRC Diameter Server \(SRC CLI\) on page 50](#)
- [Viewing Information About SRC Diameter Server Requests \(SRC CLI\) on page 50](#)

- [Viewing SRC Diameter Server State \(SRC CLI\) on page 51](#)

PART 3

Administration

- [Routine Monitoring on page 49](#)

CHAPTER 7

Routine Monitoring

- [Viewing Statistics for the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 49](#)
- [Viewing Statistics for the SRC Diameter Server \(SRC CLI\) on page 49](#)
- [Viewing Message Handler Information for the SRC Diameter Server \(SRC CLI\) on page 50](#)
- [Viewing Server Process Information for the SRC Diameter Server \(SRC CLI\) on page 50](#)
- [Viewing Information About SRC Diameter Server Requests \(SRC CLI\) on page 50](#)
- [Viewing SRC Diameter Server State \(SRC CLI\) on page 51](#)
- [Monitoring Statistics for the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 51](#)

Viewing Statistics for the Pseudo–RADIUS Authorization Server (SRC CLI)

Purpose View RADIUS statistics for the pseudo–RADIUS authorization server.

Action To display client statistics for the pseudo–RADIUS authorization server:

```
user@host> show external-subscriber-monitor statistics radius-authorization
```

Client Statistics

Client Address	10.227.7.45
Number of received radius access-request	602524
Number of dropped radius access-request	0
Number of radius access-accept sent	602524
Number of radius access-reject sent	0
Number of dropped radius authentication response	0
Number of access request received per second	58

To display specific client statistics for the pseudo–RADIUS authorization server:

```
user@host> show external-subscriber-monitor statistics radius-authorization client-address  
client-address
```

Related Documentation

- [Configuring Pseudo–RADIUS Authorization Server Properties \(SRC CLI\) on page 30](#)
- [Monitoring Statistics for the Pseudo–RADIUS Authorization Server \(SRC CLI\) on page 51](#)

Viewing Statistics for the SRC Diameter Server (SRC CLI)

Purpose View information about the server process and the state of the Diameter server.

Action To display information about the server process and the state of the Diameter server:

user@host> **show diameter statistics**

- Related Documentation**
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
 - [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)

Viewing Message Handler Information for the SRC Diameter Server (SRC CLI)

Purpose View information about the message handler and message flows for the Diameter server.

Action To display information about the message handler for the Diameter server:

user@host> **show diameter statistics message-handler**

To display information about message flows for the Diameter server:

user@host> **show diameter statistics message-handler message-flow**

To display information about a specific message flow:

user@host> **show diameter statistics message-handler message-flow id** *id*

- Related Documentation**
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
 - [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)

Viewing Server Process Information for the SRC Diameter Server (SRC CLI)

Purpose View information about the server process.

Action To display about the server process:

user@host> **show diameter statistics process**

- Related Documentation**
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
 - [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)

Viewing Information About SRC Diameter Server Requests (SRC CLI)

Purpose View information about Diameter server requests.

Action To display information about Diameter server requests:

user@host> **show diameter statistics requests**

- Related Documentation**
- [Configuring the Diameter Application \(SRC CLI\) on page 16](#)
 - [SRC CLI Commands to Monitor the SRC Diameter Server on page 45](#)

Viewing SRC Diameter Server State (SRC CLI)

Purpose	View status information about the Diameter server.
Action	<p>To display information about the status of the Diameter server:</p> <pre>user@host> show diameter status</pre> <p>To display information about the Diameter clients:</p> <pre>user@host> show diameter status clients</pre> <p>To display information about a specific client:</p> <pre>user@host> show diameter status clients client-name <i>client-name</i></pre> <p>To display information about the Diameter peers:</p> <pre>user@host> show diameter status peers</pre> <p>To display information about a specific peer:</p> <pre>user@host> show diameter status peers peer-name <i>peer-name</i></pre>
Related Documentation	<ul style="list-style-type: none">• Configuring the Diameter Application (SRC CLI) on page 16• Configuring Diameter Peers (SRC CLI) on page 22• SRC CLI Commands to Monitor the SRC Diameter Server on page 45

Monitoring Statistics for the Pseudo–RADIUS Authorization Server (SRC CLI)

Purpose	Display real-time RADIUS authorization statistics for the pseudo–RADIUS authorization server.
Action	<p>To display real-time client statistics for the pseudo–RADIUS authorization server:</p> <pre>user@host> monitor external-subscriber-monitor statistics radius-authorization client-address <i>client-address</i></pre>
Related Documentation	<ul style="list-style-type: none">• Configuring Pseudo–RADIUS Authorization Server Properties (SRC CLI) on page 30• Viewing Statistics for the Pseudo–RADIUS Authorization Server (SRC CLI) on page 49

PART 4

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