

## Chapter 6

# Configuring the SAE for a PCMM Environment with SDX Configuration Editor

This chapter how to set up the SAE for a PCMM environment on a Solaris platform with SDX Configuration Editor. You can also use the SRC CLI to configure the SAE on a C-series platform or a Solaris platform. See *Chapter 5, Configuring the SAE for a PCMM Environment with the SRC CLI*.

Topics in this chapter include:

- Overview of Configuring the SAE for a Cable Network Environment on page 65
- Configuring the SAE to Manage PCMM Devices with SDX Configuration Editor on page 66
- Setting Up SAE Communities on page 69
- Configuring SAE Properties for the Event Notification API on page 70
- Configuring PCMM Record-Keeping Server Plug-Ins on page 71
- Configuring RKS Peers on page 74
- Configuring CMTS-Specific RKS Plug-Ins on page 75

## Overview of Configuring the SAE for a Cable Network Environment

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The tasks to configure the SAE for a cable network environment are:

1. Configuring the SAE to Manage PCMM Devices with SDX Configuration Editor on page 66.
2. Configuring the Session Store Feature. See *SRC-PE Network Guide, Chapter 3, Configuring the SAE with SDX Configuration Editor*.
3. Setting Up SAE Communities on page 69.
4. Configuring SAE Properties for the Event Notification API on page 70 (if you are using an external address manager).

5. Configuring PCMM Record-Keeping Server Plug-Ins on page 71 (if you are using the SAE's embedded policy server).
6. Configuring RKS Peers on page 74.
7. Configuring CMTS-Specific RKS Plug-Ins on page 75

In addition to configuring the SAE, you need to:

1. Configure the CMTS device in the directory (if you are using the SAE's embedded policy server). See *Adding Objects for CMTS Devices to the Directory with SDX Admin* on page 81.
2. Configure the NIC (if you are using assigned IP subscribers). See *Chapter 9, Using the NIC Resolver in a PCMM Environment*.
3. Enable the COPS interface on the CMTS device. See the documentation for your CMTS device for information about how to do this.

## Configuring the SAE to Manage PCMM Devices with SDX Configuration Editor

The SAE connects to the PCMM device by using a COPS over TCP connection. The PCMM device driver controls this connection. You create a PCMM device driver for each CMTS device that the SAE manages. You can specify properties for the PCMM device driver in the Router tab of SDX Configuration Editor.

▼ PCMM Device Driver	
Keepalive Interval	45
TCP Connection Timeout	5
Application Manager ID	1
Message Timeout	120000
COPS Message Maximum Length	204800
COPS Message Read Buffer Size	30000
COPS Message Write Buffer Size	30000
SAE Community Manager	PCMMCommunityManager
Disable Full Sync	false
Disable PCMM I03 Policy	true
Session Recovery Retry Interval	3600000
Element ID	1 <span>Disable</span>
Default RKS Plug-in	rksTracking <span>Enable</span>

**Keepalive Interval [s]**

- Interval between keepalive messages sent from the COPS client (the PCMM device) to the COPS server (the SAE). The COPS client monitors the COPS connection by sending keepalive messages at random intervals between one-fourth and three-fourths of the specified interval. If the client or the server does not receive the expected keepalive answer within the specified timeout, the client closes the connection.
- Value—Number of seconds in the range 0–2147483647. A value of 0 means that the timeout is disabled.
- Default—45
- Property name—Router.pcmml.Keepalive

**TCP Connection Timeout [s]**

- Timeout for opening a TCP connection to the PCMM device.
- Value—Number of seconds in the range 0–2147483647
- Default—5
- Property name—Router.pcmml.open\_connection\_timeout

**Application Manager ID**

- When this SAE is configured as the application manager, the identifier of the application manager. The application manager includes this identifier in all messages that it sends to the policy server. The policy server passes this ID to the CMTS device in Gate Control messages. The CMTS device returns the ID associated with the gate to the policy server. The policy server uses this information to associate gate messages with a particular application manager.
- Value—4-byte unsigned integer; must be unique in a service provider network
- Default—0

**Message Timeout [ms]**

- Amount of time that the COPS server (the SAE) waits for a response to COPS requests from the COPS client (the PCMM device). Under a high load the PCMM device may not be able to respond fast enough to COPS requests. Change this value only if a high number of COPS timeout events appear in the error log.
- Value—Number of milliseconds in the range 0–2147483647
- Default—120000
- Property name—Router.pcmml.message\_timeout

**COPS Message Maximum Length [bytes]**

- Maximum length of a COPS message.
- Value—Number of bytes in the range 4 bytes to 2 GB
- Guidelines—We recommend that you use the default setting.
- Default—204800
- Property name—Router.pcmml.message\_max\_length

**COPS Message Read Buffer Size [bytes]**

- Buffer size for receiving COPS messages from the COPS client.
- Value—Number of bytes in the range 4 bytes to 2 GB
- Guidelines—We recommend that you use the default setting unless you are instructed to change it by Juniper Networks engineers.
- Default—30000
- Property name—Router.pcomm.message\_read\_buffer\_size

**COPS Message Write Buffer Size [bytes]**

- Buffer size for sending COPS messages to the COPS client.
- Value—Number of bytes in the range 4 bytes to 2 GB
- Guidelines—We recommend that you use the default setting unless you are instructed to change it by Juniper Networks engineers.
- Default—30000
- Property name—Router.pcomm.message\_write\_buffer\_size

**SAE Community Manager**

- Name of the community manager that manages PCMM driver communities. Active SAEs are selected from this community. You define community managers in the Ext. Interfaces tab of SDX Configuration Editor. See *Configuring the SAE Community Manager* on page 69.
- Value—Community name
- Default—PCMMCommunityManager
- Property name—Router.pcomm.community.name

**Session Recovery Retry Interval**

- Time between attempts by the SAE to restore service sessions that are being recovered in the background when state synchronization completes with a state-data-incomplete error. The SAE attempts to restore a service session if it receives a service modification or deactivation request for an unrecovered service session before the next interval.
- Value—Number of milliseconds in the range 0–2147483647
- Guidelines—We recommend setting this value to 3600000 (1 hour) or longer.
- Default—3600000

**Element ID**

- Enables or disables and sets the unique identifier that the SAE uses to identify itself when it originates RKS events.
- Value—8-byte unsigned integer in the range 0–99999; must be unique within a PCMM network
- Default—0
- Property name—Router.pcomm.emid

**Default RKS Plug-In**

- Enables or disables and sets the RKS plug-in to which the SAE sends event messages.
- Value—Name of an RKS plug-in; see *Configuring PCMM Record-Keeping Server Plug-Ins* on page 71
- Default—Disabled
- Property name—Router.pcmr.rks.plugin

**Setting Up SAE Communities**

You can configure the following for SAE communities:

- Define the members of an SAE community by adding the IP addresses of SAEs in the community to the virtual router object of the network device in the directory.

See *Creating a Virtual Router for the CMTS Device with SDX Admin* on page 83.

- Configure parameters for the SAE community manager.

See *Configuring the SAE Community Manager* on page 69.

- Specify the name of the community manager in the PCMM driver configuration.

See *Configuring the SAE to Manage PCMM Devices with SDX Configuration Editor* on page 66.

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

**Configuring the SAE Community Manager**

You can configure the properties for an SAE community manager in the Ext. Interface tab of SDX Configuration Editor.

Community Manager (PCMMCommunityManager)	
Keepalive Interval [s]	30
Number of Threads	5
Acquire Timeout	15
Blackout Time	30

**Keepalive Interval [s]**

- Interval between keepalive messages sent from the active SAE to the passive members of the community.
- Value—Number of seconds in the range 0–2147483647
- Default—30
- Property name—SAEFeature.PCMMCommunityManager.heartbeat

**Number of Threads**

- Number of threads that are allocated to manage the community.
- Value—Integer in the range 0–2147483647
- Guidelines—You generally do not need to change this property.
- Default—5
- Property name—SAEFeature.PCMMCommunityManager.num\_threads

**Acquire Timeout**

- Amount of time an SAE waits for a remote member of the community when it is acquiring a distributed lock. To avoid race conditions when the SAE community is determining which SAE is the active SAE, the community manager has a distributed lock. When an SAE attempts to become the active SAE, it needs to acquire the distributed lock.
- Value—Number of seconds in the range 0–2147483647
- Guidelines—You generally do not need to change this property.
- Default—15
- Property name—SAEFeature.PCMMCommunityManager.acquire\_timeout

**Blackout Time**

- Amount of time that an active SAE must wait after it shuts down before it can try to become the active SAE of the community again.
- Value—Number of seconds in the range 0–2147483647
- Default—30
- Property name—SAEFeature.PCMMCommunityManager.blackout\_time

## Configuring SAE Properties for the Event Notification API

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You can configure the SAE properties for the event notification API in the Ext. Interface tab of SDX Configuration Editor.

▼ null (event)

Retry Time	<input type="text" value="300"/>
Retry Limit	<input type="text" value="5"/>
Number of Threads	<input type="text" value="5"/>

**Retry Time**

- Amount of time between attempts to send events that could not be delivered.
- Value—Number of seconds in the range 0–2147483647
- Default—300
- Property name—SAEFeature.event.retry\_time

**Retry Limit**

- Number of times an event fails to be delivered before the event is discarded.
- Value—Integer in the range 0–2147483647
- Default—5
- Property name—SAEFeature.event.retry\_limit

**Number of Threads**

- Number of threads allocated to process events.
- Value—Integer in the range 0–2147483647
- Default—5
- Property name—SAEFeature.event.num\_threads

## Configuring PCMM Record-Keeping Server Plug-Ins

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You configure PCMM RKS plug-ins in the Plug-Ins tab of SDX Configuration Editor. To set up PCMM record-keeping server plug-ins:

1. In the navigation pane, select the SAE object for which you want to configure plug-ins.
2. Select the Plug-Ins tab.

The Plug-Ins pane appears.

3. In the Plug-In Pool area of the Plug-Ins pane, select **PCMM Record Keeping Server Plugin** from the drop-down list, and click **Create a New Instance of**.

The instance appears in the Plug-In Pool area.

▼ PCMM Record Keeping Server Plugin (RKS Plug-in)

Load Balancing Mode	Failover	
Failover Failback Timer	-1	
Retry Interval [ms]	3000	
Max Queue Length	10000	
Bind Address		Disable
UDP Port		Disable
FEID MSO Data		Disable
FEID MSO Domain Name		
Trusted Element	True	
Default Peer		

► Peer Group

4. Fill in the plug-in instance fields as described below.
5. In the Peer Group area, create at least one peer to use as the default peer. See *Configuring RKS Peers* on page 74.
6. In the PCMM Device Driver configuration, add the RKS plug-in as the default RKS plug-in or as a CMTS-specific plug-in. See *Configuring the SAE to Manage PCMM Devices with SDX Configuration Editor* on page 66.

### Load Balancing Mode

- Selects the mode for load-balancing RKSs.
- Value—Failover, round-robin
  - Failover—SAE sends requests to the RKS configured as the default peer. If the default peer fails, the SAE uses the next server configured in the peer group. The SAE cycles through the configured servers as needed.
  - Round-robin—SAE alternates requests between all RKSs configured in the peer group.
- Default—Failover
- Property name—loadBalancingMode

### Failover failback timer

- Controls if and when the SAE attempts to fail back to the default peer.
- Value—Integer
  - $n$ —Number of seconds after a failover that the SAE attempts to fail back; range is 1–2147483647
  - 0—SAE always attempts to fail back
  - -1—SAE never attempts to fail back



- Default—1
- Property name—failbackTimer

### **Retry interval [ms]**

- Time the SAE waits for a response from an RKS before it resends the packet. The SAE keeps sending packets until either the RKS acknowledges the packet or the maximum timeout is reached.
- Value—Number of milliseconds in the range 0–2147483647
- Default—3000
- Property name—local.retryInterval

### **Max Queue Length**

- Maximum number of unacknowledged messages that the plug-in receives from the RKS before it discards new messages.
- Value—Integer in the range 0–2147483647
- Default—10000
- Property name—local.maxWaitingQueueLength

### **Bind Address**

- Source IP address that the plug-in uses to communicate with the RKS.
- Value—IP address; if you do not specify an address, the global default address is used. The SAE automatically sets the global default address when you run the **etc/config** command during initial configuration of the SAE. The property for the global address is the AccountingMgr.local.address property in the */opt/UMC/sae/etc/default.properties* file.
- Default—No value
- Property name—local.address

### **UDP Port**

- Source UDP port or a pool of ports that the plug-in uses to communicate with the RKS.
- Value—You can enter a single port number, a pool of port numbers, or a list of port numbers and port ranges. If you do not specify a UDP port, the global default port is used (see *Configuring UDP Ports for RADIUS Plug-Ins in SRC-PE Subscribers and Subscriptions Guide, Chapter 5, Configuring Authorization and Accounting Plug-Ins for Solaris Platforms*).
  - Port number in the range 1–65535
  - A range of ports in the format port-port; for example, 7000-7003
  - A comma-separated list of port numbers and port ranges
- Default—No value
- Example—7000-7003, 7006, 7007-7009
- Property name—local.port

**FEID MSO Data**

- MSO-defined data in the financial entity ID (FEID) attribute, which is included in event messages.
- Value—First eight bytes of the FEID attribute
- Default—Zero filled
- Property name—feid.msoData

**FEID MSO Domain Name**

- MSO domain name in the FEID attribute that uniquely identifies the MSO for billing and settlement purposes.
- Value—Domain name up to 239 bytes; begins at the ninth byte of the FEID attribute
- Default—No value
- Property name—feid.msoDomainName

**Trusted Element**

- When the SAE is running as a policy server—which means that the SAE sends event messages directly to the RKS—specifies whether or not the SAE is a trusted network element.
- Value
  - True—The SAE is a trusted element.
  - False—The SAE is not a trusted element.
- Default—True
- Property name—trusted

**Default peer**

- Name of the primary RKS to which the SAE sends accounting packets.
- Value—Name of the RKS as defined in the RKS peer configuration
- Default—No value
- Property name—defaultPeer

**Configuring RKS Peers**

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An RKS peer is an instance of an RKS. A PCMM environment has a primary RKS and optionally a secondary RKS. The primary RKS is mandatory, and you assign the RKS as primary by configuring it as the default peer in the RKS plug-in. The secondary RKS is optional, and it is an RKS peer that is not configured as the default peer. If you define multiple nondefault peers, one of them is randomly chosen to be the secondary RKS.

RKS peers are configured in the peer group for each PCMM RKS plug-in instance. To create an RKS peer:

1. In the Peer Group area of a PCMM RKS plug-in instance, select RKS Peer and click Create a New Instance of.

The Create New Instance dialog box appears.

2. Assign a name to the instance, and click **OK**.

The new peer appears in the Peer Group area.

3. Fill in the fields as described below.

#### **RKS Server Address**

- IP address of the RKS server to which the SAE sends accounting data.
- Value—IP address
- Default—No value
- Property name—peer. < peer name > .remote.address

#### **RKS Server Port**

- Port used for sending accounting packets.
- Value—Valid UDP port
- Default—1813
- Property name—peer. < peer name > .remote.port

## **Configuring CMTS-Specific RKS Plug-Ins**

You can configure an RKS plug-in for specific CMTS devices. When there are events for the CMTS device, the SAE sends the events to the specified plug-in.

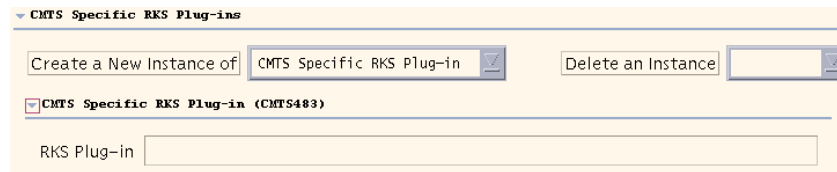
To assign a CMTS-specific RKS plug-in:

1. In the CMTS Specific RKS Plug-ins area of a PCMM device driver configuration, select CMTS Specific RKS Plug-in, and click **Create a New Instance of**.

The Create New Instance dialog box appears.

2. Assign the name of the CMTS device as the instance name, and click **OK**.

The new plug-in instance appears.



3. Fill in the RKS Plug-in field.

### **RKS Plug-in**

- Name of the plug-in to which the SAE sends events for this CMTS device.
- Value—Name of an RKS plug-in. See *Configuring PCMM Record-Keeping Server Plug-Ins* on page 71.
- Default—No value
- Property name—Router.pcm. < CMTS name > .rks.plugin