

## Connections to Managed Devices

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This topic describes the connections between the SAE and Juniper Networks routers, CMTS devices, and the Juniper Policy Server (JPS).

### ***COPS Connection Between JUNOSe Routers and the SAE***

The SAE and JUNOSe routers communicate using the Common Open Policy Service (COPS) protocol. The SAE supports two versions of COPS:

- COPS usage for policy provisioning (COPS-PR)
- COPS External Data Representation Standard (XDR) mode

The version of COPS that you use depends on the version of COPS that your JUNOSe router supports. When you set up your JUNOSe router to work with the SAE, you enable either COPS-PR mode or COPS XDR mode. There are no configuration differences on the SAE between COPS-PR and COPS XDR.

The following SRC features require the use of COPS-PR:

- Policy sharing on JUNOSe routers
- Multiple classify traffic conditions in policy lists

### ***BEEP Connection Between JUNOS Routing Platforms and the SAE***

The SAE interacts with a JUNOS software process, referred to as the SRC software process, on a JUNOS routing platform. The SAE and the SRC software process communicate using the Blocks Extensible Exchange Protocol (BEEP).

When a JUNOS routing platform that the SAE manages goes online, it initiates a BEEP session for the SAE. The SAE gets configuration information from the router, and then it builds and installs the policies that control the router's behavior. If the policies are subsequently modified in the directory, the SAE builds a new configuration and reconfigures the interface on the JUNOS routing platform.



**NOTE:** The SAE manages interfaces on JUNOS routing platforms only when the interfaces are configured in the global configuration and the router sends added, changed, or deleted notifications to the SAE. Router administrators should not manually change the configuration of interfaces that the SAE is managing. If you manually change a configuration, you must remove the SAE from the system.

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When there are configuration changes on the router, the router sends a notification to the SAE through the BEEP connection. The notification does not include the content of the configuration changes. When the SAE receives the notification, it uses its JUNOScript client to get the changed configuration from the router.

Interfaces that have been deleted from the router along with their associated objects (sessions, policies) remain on the router until state synchronization occurs.

## **COPS Connection Between CMTS Devices and the SAE**

The SAE uses the COPS protocol as specified in the [PacketCable Multimedia Specification PKT-SP-MM-I03-051221](#) to manage *PacketCable Multimedia Specification* (PCMM)-compliant CMTS devices in a cable network environment. The SAE connects to the CMTS device by using a COPS over Transmission Control Protocol (TCP) connection.

In cable environments, the SAE manages the connection to the CMTS device. The CMTS device does not provide address requests or notify the SAE of new subscribers, subscriber IP addresses, or any other attributes. IP address detection and all other subscriber attributes are collected outside of the COPS connection to the CMTS device. The SAE uses COPS only to push policies to the CMTS device and to learn about the CMTS status and usage data.

Because the CMTS device does not have the concept of interfaces, the SRC module uses pseudointerfaces to model CMTS subscriber connections similar to subscriber connections for JUNOS routing platforms and JUNOSe routers.

## **COPS Connection Between Juniper Policy Servers and the SAE**

When the SAE is acting as an application manager in a PCMM environment, it connects to the JPS through an interface on the JPS. The JPS uses the COPS protocol as specified in the PacketCable Multimedia Specification PKT-SP-MM-I03-051221 for its interface connections. The JPS communicates with the application manager by using a COPS over TCP connection.

For more information, see .

- Related Topics**
- Overview of a PCMM Environment
  - Overview of the JPS
  - Configuring the SAE to Manage JUNOS Routing Platforms
  - Adding JUNOSe Routers and Virtual Routers with the CLI

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