Chapter 21
Configuring Admission Control with the SRC CLI

This chapter describes how to use the SRC command-line interface (CLI) to configure the SRC Admission Control Plug-In (SRC-ACP) application for use in the SRC network. You can use the CLI to configure SRC-ACP on a Solaris platform or on a C-series Controller.

You can also use SRC configuration applications to configure SRC-ACP on a Solaris platform. See *Chapter 26, Providing Admission Control with SRC-ACP on a Solaris Platform.*

Topics in this chapter include:

Configuration Statements for SRC-ACP

Use the following configuration statements to configure SRC-ACP at the [edit] hierarchy level:

```
shared acp configuration acp-options {
    backup-directory backup-directory;
    mode (edge | backbone | dual);
    event-cache-size event-cache-size;
    overload-method overload-method;
    reservation-timeout reservation-timeout;
    congestion-point-auto-completion;
    tuning-factor tuning-factor;
    subscriber-bandwidth-exceed-message subscriber-bandwidth-exceed-message;
    network-bandwidth-exceed-message network-bandwidth-exceed-message;
    backup-database-maximum-size backup-database-maximum-size;
    remote-update-database-index-keys remote-update-database-index-keys;
    interface-tracking-filter interface-tracking-filter;
    state-sync-bulk-size state-sync-bulk-size;
}

shared acp configuration corba {
    acp-ior acp-ior;
    remote-update-ior remote-update-ior;
}

shared acp configuration ldap service-data {
    edge-congestion-point-dn edge-congestion-point-dn;
    backbone-congestion-point-dn backbone-congestion-point-dn;
    reload-congestion-points;
    congestion-points-eventing;
    server-address server-address;
    server-port server-port;
    dn dn;
    principal principal;
    password password;
    event-dn event-dn;
    directory-eventing;
    polling-interval polling-interval;
}

shared acp configuration ldap subscriber-data {
    congestion-points-eventing;
    server-address server-address;
    server-port server-port;
    dn dn;
    principal principal;
    password password;
    event-dn event-dn;
    directory-eventing;
    polling-interval polling-interval;
}

shared acp configuration logger name ...

shared acp configuration logger name file {
    filter filter;
```

```
        filename filename;
        rollover-filename rollover-filename;
        maximum-file-size maximum-file-size;
}

shared acp configuration logger name syslog {
        filter filter;
        host host;
        facility facility;
        format format;
}

shared acp configuration redundancy {
        enable-redundancy;
        local-ior local-ior;
        remote-ior remote-ior;
        ignore-user-tracking-out-of-sync;
        community-heartbeat community-heartbeat;
        community-acquire-timeout community-acquire-timeout;
        community-blackout-timeout community-blackout-timeout;
        redundant-naming-service redundant-naming-service;
}

shared acp configuration scripts-and-classification {
        script-factory-class script-factory-class;
        classification-factory-class classification-factory-class;
        classification-script classification-script;
        congestion-point-profile-script congestion-point-profile-script;
        extension-path extension-path;
}

shared admission-control device name {
        description description;
}

shared admission-control device name interface name {
        description description;
        upstream-provisioned-rate upstream-provisioned-rate;
        downstream-provisioned-rate downstream-provisioned-rate;
        upstream-background-bandwidth upstream-background-bandwidth;
        downstream-background-bandwidth downstream-background-bandwidth;
        action-type (url | python | java-class | java-archive);
        action-class-name action-class-name;
        action-file-url action-file-url;
        action-parameters [action-parameters...];
}

shared congestion-points profile name {
        interface [interface...];
}

slot number acp {
        java-runtime-environment java-runtime-environment;
        java-heap-size java-heap-size;
        java-garbage-collection-options java-garbage-collection-options;
        base-dn base-dn;
```

```
        snmp-agent;
        shared shared;
    }

    slot number acp initial {
        static-dn static-dn;
        dynamic-dn dynamic-dn;
    }

    slot number acp initial directory-connection {
        url url;
        backup-urls [backup-urls...];
        principal principal;
        credentials credentials;
        protocol (ldaps);
        timeout timeout;
        check-interval check-interval;
        blacklist;
        snmp-agent;
    }

    slot number acp initial directory-eventing {
        eventing;
        signature-dn signature-dn;
        polling-interval polling-interval;
        event-base-dn event-base-dn;
        dispatcher-pool-size dispatcher-pool-size;
    }
```

For detailed information about each configuration statement, see the *SRC-PE CLI Command Reference*.

Configuring SRC-ACP

To use SRC-ACP in the SRC network, you must perform some configuration. For information about these configuration procedures, see:

1. (Optional) Creating Grouped Configurations for SRC-ACP on page 287

2. Configuring Local Properties for SRC-ACP on page 288

3. Configuring the SAE for SRC-ACP on page 291

4. Configuring SRC-ACP Properties on page 294

5. (Edge and dual mode only) Configuring SRC-ACP to Manage the Edge Network on page 306

6. (Backbone and dual mode only) Configuring SRC-ACP to Manage the Backbone Network on page 310

7. Starting SRC-ACP on page 325

You can automate and scale the configuration of congestion points using congestion point classification. For more information, see *Chapter 22, Configuring Congestion Point Classification with the SRC CLI*.

Creating Grouped Configurations for SRC-ACP

We recommend that you configure SRC-ACP within a group. When you create a configuration group, the software creates a configuration with default values filled in.

Configuration groups allow you to share the SRC-ACP configuration with different SRC-ACP instances in the SRC network. You can also set up different configurations for different instances.

You can then create a grouped SRC-ACP configuration that is shared with some SRC-ACP instances. For example, if you create two different SRC-ACP groups called config1 and config2 within the shared SRC-ACP configuration, you could select the SRC-ACP configuration that should be associated with a particular SRC-ACP instance.

Configuring an SRC-ACP Group

Use the shared option of the slot *number* acp statement to select the group for an SRC-ACP instance as part of the local configuration. Use the shared acp group *name* statements to configure the group.

To select and configure a group:

1. From configuration mode, select a group for an SRC-ACP instance. For example, to select a group called config1 in the path /:

   [edit]
   user@host# **set slot 0 acp shared /config1**

   For more information, see *Configuring Basic Local Properties for SRC-ACP* on page 288.

2. Commit the configuration.

   [edit]
   user@host# **commit**
   commit complete.

3. From configuration mode, configure a group. For example, to configure a group called config1, specify the group as part of the SRC-ACP configuration.

    ```
    [edit]
    user@host# edit shared acp group config1 ?
    Possible completions:
      <[Enter]>            Execute this command
    > configuration
    > congestion-point-classifier
    > group                Group of ACP configuration properties
      |                    Pipe through a command
    ```

    For more information, see *Configuring SRC-ACP Properties* on page 294.

Configuring Local Properties for SRC-ACP

To configure the local properties for SRC-ACP:

1. Configure basic local properties, including Java heap memory.

    See *Configuring Basic Local Properties for SRC-ACP* on page 288.

2. Configure initial properties, including directory connection and directory eventing properties.

    See *Configuring Initial Properties for SRC-ACP* on page 289.

    See *Configuring Directory Connection Properties for SRC-ACP* on page 290.

    See *Configuring Initial Directory Eventing Properties for SRC-ACP* on page 291.

Configuring Basic Local Properties for SRC-ACP

Use the following configuration statements to configure basic local properties for SRC-ACP:

```
slot number acp {
    java-runtime-environment java-runtime-environment;
    java-heap-size java-heap-size;
    java-garbage-collection-options java-garbage-collection-options;
    base-dn base-dn;
    snmp-agent;
    shared shared;
}
```

To configure basic local properties:

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

    user@host# **edit slot 0 acp**

2. Specify the basic local properties for ACP.

    ```
    [edit slot 0 acp]
    user@host# set ?
    ```

For more information about configuring local properties for the SRC components, see *SRC-PE Getting Started Guide, Chapter 30, Configuring Local Properties with the SRC CLI*.

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

    [edit slot 0 acp]
    user@host# **set java-garbage-collection-options** *java-garbage-collection-options*

4. Select an SRC-ACP group configuration.

    [edit slot 0 acp]
    user@host# **set shared** *shared*

    For more information, see *Creating Grouped Configurations for SRC-ACP* on page 287.

5. (Optional) Verify your configuration.

    ```
    [edit slot 0 acp]
    user@host# show
    shared /config;
    initial {
      directory-connection {
        url ldap://127.0.0.1:389/;
        principal cn=conf,o=Operators,<base>;
        credentials ********;
      }
      directory-eventing {
        eventing;
        polling-interval 30;
      }
    }
    ```

Configuring Initial Properties for SRC-ACP

Use the following configuration statements to configure initial properties for SRC-ACP:

```
slot number acp initial {
    static-dn static-dn;
    dynamic-dn dynamic-dn;
}
```

To configure initial local properties:

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

    user@host# **edit slot 0 acp initial**

2. Specify the properties for SRC-ACP.

    [edit slot 0 acp initial]
    user@host# **set** ?

For more information about configuring local properties for the SRC components, see *SRC-PE Getting Started Guide, Chapter 30, Configuring Local Properties with the SRC CLI*.

3. (Optional) Verify your configuration.

```
[edit slot 0 acp initial]
user@host# show
```

Configuring Directory Connection Properties for SRC-ACP

Use the following configuration statements to configure directory connection properties for SRC-ACP:

```
slot number acp initial directory-connection {
    url url;
    backup-urls [backup-urls...];
    principal principal;
    credentials credentials;
    protocol (ldaps);
    timeout timeout;
    check-interval check-interval;
    blacklist;
    snmp-agent;
}
```

To configure directory connection properties:

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

    user@host# **edit slot 0 acp initial directory-connection**

2. Specify the properties for ACP.

    ```
    [edit slot 0 acp initial directory-connection]
    user@host# set ?
    ```

    For more information about configuring local properties for the SRC components, see *SRC-PE Getting Started Guide, Chapter 30, Configuring Local Properties with the SRC CLI*.

3. (Optional) Verify your configuration.

    ```
    [edit slot 0 acp initial directory-connection]
    user@host# show
    url ldap://127.0.0.1:389/;
    principal cn=conf,o=Operators,<base>;
    credentials ********;
    ```

Configuring Initial Directory Eventing Properties for SRC-ACP

Use the following configuration statements to configure directory eventing properties for SRC-ACP:

slot *number* acp initial directory-eventing {
    eventing;
    signature-dn *signature-dn*;
    polling-interval *polling-interval*;
    event-base-dn *event-base-dn*;
    dispatcher-pool-size *dispatcher-pool-size*;
}

To configure initial directory eventing properties:

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

    user@host# **edit slot 0 acp initial eventing**

2. Specify the initial directory eventing properties for SRC-ACP.

    [edit slot 0 acp initial directory-eventing]
    user@host# **set** ?

    For more information about configuring local properties for the SRC components, see *SRC-PE Getting Started Guide, Chapter 30, Configuring Local Properties with the SRC CLI*.

3. (Optional) Verify your configuration.

    ```
    [edit slot 0 acp initial directory-eventing]
    user@host# show
    eventing;
    polling-interval 30;
    ```

Configuring the SAE for SRC-ACP

You must configure the SAE to recognize SRC-ACP by adding information about SRC-ACP to the SAE properties. To do so:

1. Configure SRC-ACP as an external plug-in for the SAE.

2. Configure event publishers.

3. (Backbone and dual mode only) Optionally, configure a hosted plug-in that monitors the state of interfaces on VRs.

Configuring SRC-ACP as an External Plug-In

To configure an external plug-in for the SAE:

1. From configuration mode, access the configuration statement that configures the external plug-ins.

   user@host# **edit shared sae configuration plug-ins name** *name* **external**

2. Specify the the plug-in attributes.

   [edit shared sae configuration plug-ins name *name* external]
   user@host# **set attr** ?

   For edge and dual modes—upstream-bandwidth, downstream-bandwidth, service-name, router-name, login-name, user-dn, port-id, session-id, user-ip-address, nas-ip, user-session-id, event-time

   For backbone mode—upstream-bandwidth, downstream-bandwidth, service-name, router-name, session-id, nas-ip, event-time

   For more information about configuring plug-in attributes, see *SRC-PE Subscribers and Subscriptions Guide, Chapter 9, Configuring Internal, External, and Synchronization Plug-Ins with the SRC CLI*.

Configuring Event Publishers

You must configure the SAE to publish the following types of events to SRC-ACP:

- (Edge and dual mode only) Global subscriber tracking

- Global service authorization

- Global service tracking

For information about configuring event publishers, see *SRC-PE Subscribers and Subscriptions Guide, Chapter 11, Configuring Accounting and Authentication Plug-Ins with the SRC CLI*. Identify the instance of SRC-ACP by the name of the host on which you configured it.

Configuring the SAE to Monitor Interfaces for Congestion Points

☞ **NOTE:** Configure this feature only if SRC-ACP is in backbone or dual mode.

The SAE uses a hosted internal plug-in to monitor the state of interfaces on a VR for backbone congestion points. If a subscriber tries to activate a service on an interface that is unavailable, the SAE denies the request. The plug-in also monitors the directory for new backbone congestion points.

When this plug-in initializes, it reads all the backbone services from the directory and generates a list of the DNs (network interfaces) of the backbone congestion points. The SAE sends interface tracking events, which contain the names of the interfaces, VRs, and routers to this plug-in. For this feature to work correctly, the interface, VR, and router must be configured (see *Configuring Network Interfaces in the Directory for the Backbone Network* on page 310).

To configure the ACP interface listener as an internal plug-in for the SAE:

1. From configuration mode, access the configuration statement that configures the ACP interface listener.

   user@host# **edit shared sae configuration plug-ins name** *name*
   acp-interface-listener

2. Specify the IP address or name of the host that supports the directory that contains backbone service definitions and network interfaces.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set ldap-server** *ldap-server*

3. Specify the DN of the directory entry that defines the username with which the plug-in accesses the directory.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set bind-dn** *bind-dn*

4. Specify the password with which the plug-in accesses the directory.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set bind-password** *bind-password*

5. Specify whether the connection to the directory uses secure LDAP. If you do not configure a security protocol, plain socket is used.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set ldaps**

6. Specify the DN at which SRC-ACP stores backbone congestion points.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set congestion-points-base-dn** *congestion-points-base-dn*

7. Specify the DN at which SRC-ACP stores edge congestion points.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set admission-control-base-dn** *admission-control-base-dn*

8. (Optional) Specify the maximum time that the plug-in waits for the router to respond.

   [edit shared sae configuration plug-ins name *name* acp-interface-listener]
   user@host# **set timeout** *timeout*

9. Specify the object reference for the ACP plug-in, as defined by the object reference for SRC-ACP (see the **acp-ior** option in *Configuring CORBA Interfaces* on page 299).

[edit shared sae configuration plug-ins name *name* acp-interface-listener]
user@host# **set acp-remote-corba-ior** *acp-remote-corba-ior*

10. (Optional) Verify your configuration.

```
[edit shared sae configuration plug-ins name name acp-interface-listener]
user@host# show
```

Configuring SRC-ACP Properties

To configure SRC-ACP properties, perform these tasks:

- Configuring Logging Destinations for SRC-ACP on page 294

- Configuring SRC-ACP Operation on page 296

- Configuring CORBA Interfaces on page 299

- Configuring SRC-ACP Redundancy on page 300

- Configuring Connections to the Subscribers' Directory on page 302

- Configuring Connections to the Services' Directory on page 303

- Configuring SRC-ACP Scripts and Classification on page 305

Configuring Logging Destinations for SRC-ACP

Use the following configuration statements to configure logging destinations for SRC-ACP:

shared acp configuration logger *name* ...

shared acp configuration logger *name* file {
    filter *filter*;
    filename *filename*;
    rollover-filename *rollover-filename*;
    maximum-file-size *maximum-file-size*;
}

shared acp configuration logger *name* syslog {
    filter *filter*;
    host *host*;
    facility *facility*;
    format *format*;
}

Configuring Logging Destinations to Store Messages in a File

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

1. From configuration mode, access the configuration statement that configures the name and type of logging destination. In this sample procedure, the logging destination called file-1 is configured in the config group.

   user@host# **edit shared acp group config configuration logger file-1 file**

2. Specify the properties for the logging destination.

   [edit shared acp group config configuration logger file-1 file]
   user@host# **set** ?

   For more information about configuring properties for the logging destination, see *SRC-PE Monitoring and Troubleshooting Guide, Chapter 3, Configuring Logging for SRC Components with the CLI*.

3. (Optional) Verify your configuration.

   ```
   [edit shared acp group config configuration logger file-1 file]
   user@host# show
   filename var/log/acp_debug.log;
   rollover-filename var/log/acp_debug.alt;
   ```

Configuring Logging Destinations to Send Messages to System Logging Facility

To configure logging destinations to send log messages to the system logging facility:

1. From configuration mode, access the configuration statement that configures the name and type of logging destination. In this sample procedure, the logging destination called syslog-1 is configured in the config group.

   user@host# **edit shared acp group config configuration logger syslog-1 syslog**

2. Specify the properties for the logging destination.

   [edit shared acp group config configuration logger syslog-1 syslog]
   user@host# **set** ?

   For more information about configuring properties for the logging destination, see *SRC-PE Monitoring and Troubleshooting Guide, Chapter 3, Configuring Logging for SRC Components with the CLI*.

3. (Optional) Verify your configuration.

   ```
   [edit shared acp group config configuration logger syslog-1 syslog]
   user@host# show
   filter /error-;
   host loghost;
   ```

Configuring SRC-ACP Operation

Use the following configuration statements to configure how SRC-ACP operates:

```
shared acp configuration acp-options {
    backup-directory backup-directory;
    mode (edge | backbone | dual);
    event-cache-size event-cache-size;
    overload-method overload-method;
    reservation-timeout reservation-timeout;
    congestion-point-auto-completion;
    tuning-factor tuning-factor;
    subscriber-bandwidth-exceed-message subscriber-bandwidth-exceed-message;
    network-bandwidth-exceed-message network-bandwidth-exceed-message;
    backup-database-maximum-size backup-database-maximum-size;
    remote-update-database-index-keys remote-update-database-index-keys;
    interface-tracking-filter interface-tracking-filter;
    state-sync-bulk-size state-sync-bulk-size;
}
```

To configure SRC-ACP operation:

1. From configuration mode, access the configuration statement that configures SRC-ACP operation. In this sample procedure, the SRC-ACP operating properties are configured in the config group.

   user@host# **edit shared acp group config configuration acp-options**

2. Specify the folder that stores backup information about subscribers, services, and congestion points.

   [edit shared acp group config configuration acp-options]
   user@host# **set backup-directory**

3. Specify the regions of the network that SRC-ACP manages.

   [edit shared acp group config configuration acp-options]
   user@host# **set mode** (**edge** | **backbone** | **dual**)

4. Specify the number of plug-in events from the SAE that SRC-ACP can store in its cache.

   [edit shared acp group config configuration acp-options]
   user@host# **set event-cache-size** event-cache-size

5. Specify how SRC-ACP deals with situations in which the components exceed the allocated bandwidth because the service was activated after the authorization was granted.

   [edit shared acp group config configuration acp-options]
   user@host# **set overload-method** overload-method

   If you specify -1, SRC-ACP ignores overload. An integer greater than or equal to 0 specifies the bandwidth (in bits per second) by which the maximum may be exceeded.

6. Specify the time to wait before a bandwidth reservation expires. The reserved bandwidth is reclaimed by SRC-ACP when the reservation expires.

    [edit shared acp group config configuration acp-options]
    user@host# **set reservation-timeout** *reservation-timeout*

7. Specify whether SRC-ACP uses the information acquired from the router to determine the congestion points.

    [edit shared acp group config configuration acp-options]
    user@host# **set congestion-point-auto-completion**

8. Specify the factors that compensate for actual use of bandwidth, as opposed to allocated bandwidth.

    [edit shared acp group config configuration acp-options]
    user@host# **set tuning-factor** *tuning-factor*

9. Specify the error message that SRC-ACP sends when the subscriber exceeds the allocated bandwidth.

    [edit shared acp group config configuration acp-options]
    user@host# **set subscriber-bandwidth-exceed-message**
    subscriber-bandwidth-exceed-message

10. Specify the error message that SRC-ACP sends when traffic flow exceeds the allocated bandwidth on an interface between the subscriber and the router.

    [edit shared acp group config configuration acp-options]
    user@host# **set network-bandwidth-exceed-message**
    network-bandwidth-exceed-message

11. Specify the value by which the sum of the sizes of the files that contain SRC-ACP data can increment before SRC-ACP reorganizes the files.

    [edit shared acp group config configuration acp-options]
    user@host# **set backup-database-maximum-size** *backup-database-maximum-size*

    Choose a value that is significantly lower than the capacity of the machine's hard disk.

12. Specify the values to look for in the configuration data. Specifying index keys can improve performance by filtering the data.

    [edit shared acp group config configuration acp-options]
    user@host# **set remote-update-database-index-keys**
    remote-update-database-index-keys

    The value is a list of attributes, separated by commas. An attribute is one of the following text strings:

    ■   accountingId—Value of directory attribute accountingUserId.

    ■   dhcpPacket—Content of the DHCP discover request.

    ■   hostname— Name of the host on which the SAE is installed.

- ifIndex—SNMP index of the interface. This attribute is not supported on JUNOS routing platforms.

- ifRadiusClass—RADIUS class attribute on the JUNOSe interface. This attribute is not supported on JUNOS routing platforms.

- ifSessionId—Identifier for RADIUS accounting on the JUNOSe interface. This attribute is not supported on JUNOS routing platforms.

- interfaceAlias—Alias of the interface; that is, the IP description in the interface configuration.

- interfaceDescr—SNMP description of the interface.

- interfaceName—Name of the interface.

- loginName—Subscriber's login name.

- nasInetAddress—IP address of the router; using a byte array instead of an integer.

- nasPort—NAS port used by the router to identify the interface to RADIUS.

- portId—Identifier of VLAN or virtual circuit. For a virtual circuit, use the format < VPI > / < VCI > . This attribute is not supported on JUNOS routing platforms.

  - < VPI > —Virtual path identifier

  - < VCI > —Virtual connection identifier

- primaryUserName—PPP login name or the public DHCP username. This attribute is not supported on JUNOS routing platforms.

- routerName—Name of the virtual router in the format < virtualRouter > @ < router > .

  - < virtualRouter > —Virtual router name

  - < router > —Router name

- routerType—Type of router driver.

- userInetAddress—IP address of the subscriber that uses a byte array instead of an integer.

- userMacAddress—MAC address of the DHCP subscriber. This attribute is not supported on JUNOS routing platforms.

- userRadiusClass—RADIUS class attribute of the subscriber session for a service. This attribute can occur multiple times and can be returned by an authorization plug-in.

- userType—Type of subscriber.

13. Specify the interface tracking event to be ignored by SRC-ACP.

[edit shared acp group config configuration acp-options]
user@host# **set interface-tracking-filter** *interface-tracking-filter*

The value is filter strings in the format of a list of < attribute > = < value > pairs. The filter strings can be contained within query operations.

- < attribute >—Name of an attribute for an interface tracking event. See value for the **remote-update-database-index-keys** option described in step 12.

- < value >—Filtering string of the following types:

  - *—Any value

  - Explicit string—Any value matching the specified string (not case-sensitive)

  - String containing an asterisk—Any value containing the specified string (not case-sensitive)

- To perform query operations on filter strings, you can use the following values in your filter strings:

  - ()—Match no objects.

  - (*)—Match all objects.

  - (& < filter > < filter > ...)—Performs logical AND operation on filter strings; true if all filter strings match.

  - (| < filter > < filter > ...)—Performs logical OR operation on filter strings; true if at least one filter string matches.

  - (! < filter >)—Performs logical NOT operation on filter string; true if the filter string does not match.

14. (Optional) Specify the number of events the SAE sends to SRC-ACP in a single method call during state synchronization.

    [edit shared acp group config configuration acp-options]
    user@host# **set state-sync-bulk-size** *state-sync-bulk-size*

15. (Optional) Verify your configuration.

    ```
    [edit shared acp group config configuration acp-options]
    user@host# show
    ```

Configuring CORBA Interfaces

Use the following configuration statements to configure CORBA interfaces for SRC-ACP:

shared acp configuration corba {
    acp-ior *acp-ior*;
    remote-update-ior *remote-update-ior*;

```
}
```

To configure CORBA interfaces:

1. From configuration mode, access the configuration statement that configures CORBA interfaces for SRC-ACP. In this sample procedure, the CORBA interfaces are configured in the config group.

   user@host# **edit shared acp group config configuration corba**

2. Export the object reference for SRC-ACP through either a local file or a Common Object Services (COS) naming service.

   [edit shared acp group config configuration corba]
   user@host# **set acp-ior** *acp-ior*

3. Specify the object reference for the ACP external interface.

   [edit shared acp group config configuration corba]
   user@host# **set remote-update-ior** *remote-update-ior*

4. (Optional) Verify your configuration.

   ```
   [edit shared acp group config configuration corba]
   user@host# show
   acp-ior file:///var/acp/acp.ior;
   remote-update-ior file:///var/acp/sra.ior;
   ```

Configuring SRC-ACP Redundancy

Use the following configuration statements to configure SRC-ACP redundancy and state synchronization with the SAE:

```
shared acp configuration redundancy {
    enable-redundancy;
    local-ior local-ior;
    remote-ior remote-ior;
    ignore-user-tracking-out-of-sync;
    community-heartbeat community-heartbeat;
    community-acquire-timeout community-acquire-timeout;
    community-blackout-timeout community-blackout-timeout;
    redundant-naming-service redundant-naming-service;
}
```

To configure SRC-ACP redundancy and state synchronization with the SAE:

1. From configuration mode, access the configuration statement that configures SRC-ACP redundancy. In this sample procedure, the properties are configured in the config group.

   user@host# **edit shared acp group config configuration redundancy**

2. (Optional) Enable SRC-ACP redundancy.

   [edit shared acp group config configuration redundancy]
   user@host# **set enable-redundancy**

3. Export the object reference for this SRC-ACP (local interface) through a Common Object Services (COS) naming service in a redundant SRC-ACP configuration.

    [edit shared acp group config configuration redundancy]
    user@host# **set local-ior** *local-ior*

4. Resolves the object reference for the other SRC-ACP (remote interface) through a Common Object Services (COS) naming service in a redundant SRC-ACP configuration. For redundancy, the remote IOR value of one SRC-ACP must match the local IOR value of the other SRC-ACP.

    [edit shared acp group config configuration redundancy]
    user@host# **set remote-ior** *remote-ior*

5. (Optional) Specify whether user tracking events should be ignored when they raise an OutOfSync exception to the SAE when state synchronization is enabled. SRC-ACP raises an OutOfSync exception when SRC-ACP handles service tracking or authentication events without receiving a user start event first.

    [edit shared acp group config configuration redundancy]
    user@host# **set ignore-user-tracking-out-of-sync**

6. (Optional) Specify the time interval for community members to check each other's availability when both redundancy and state synchronization are enabled.

    [edit shared acp group config configuration redundancy]
    user@host# **set community-heartbeat** *community-heartbeat*

7. (Optional) Specify the time to wait before trying to reacquire the distributed lock when both redundancy and state synchronization are enabled.

    [edit shared acp group config configuration redundancy]
    user@host# **set community-acquire-timeout** *community-acquire-timeout*

8. (Optional) Specify the time to wait before regaining control when both redundancy and state synchronization are enabled.

    [edit shared acp group config configuration redundancy]
    user@host# **set community-blackout-timeout** *community-blackout-timeout*

9. Export the object reference for the backup naming service through a local file or COS naming service in a redundant SRC-ACP configuration. The primary SRC-ACP registers the IOR and redundancy IOR to both naming services, while the secondary SRC-ACP registers the redundancy IOR to both naming services.

    [edit shared acp group config configuration redundancy]
    user@host# **set redundant-naming-service** *redundant-naming-service*

10. (Optional) Verify your configuration.

    ```
    [edit shared acp group config configuration redundancy]
    user@host# show
    ```

Configuring Connections to the Subscribers' Directory

Use the following configuration statements to configure how SRC-ACP connects to the directory that contains subscriber information:

```
shared acp configuration ldap subscriber-data {
    congestion-points-eventing;
    server-address server-address;
    server-port server-port;
    dn dn;
    principal principal;
    password password;
    event-dn event-dn;
    directory-eventing;
    polling-interval polling-interval;
}
```

To configure connections to the directory that stores subscriber information:

1. From configuration mode, access the configuration statement that configures SRC-ACP connections to the subscribers' directory. In this sample procedure, the connections are configured in the config group.

   user@host# **edit shared acp group config configuration ldap subscriber-data**

2. (Optional) Enable directory eventing for congestion points.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set congestion-points-eventing**

3. Specify the list of primary and redundant servers that manage data for subscribers.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set server-address** *server-address*

4. Specify the TCP port for the directory.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set server-port** *server-port*

5. Specify the DN of the root of the directory.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set dn** *dn*

6. Specify the DN used to authorize connections to the directory.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set principal** *principal*

7. Specify the password used to authorize connections to the directory.

   [edit shared acp group config configuration ldap subscriber-data]
   user@host# **set password** *password*

8. Specify the DN of the directory that contains event information.

    [edit shared acp group config configuration ldap subscriber-data]
    user@host# **set event-dn** *event-dn*

9. (Optional) Enable directory eventing.

    [edit shared acp group config configuration ldap subscriber-data]
    user@host# **set directory-eventing**

10. Specify the time interval at which the SRC component polls the directory.

    [edit shared acp group config configuration ldap subscriber-data]
    user@host# **set polling-interval** *polling-interval*

11. (Optional) Verify your configuration.

    ```
    [edit shared acp group config configuration ldap subscriber-data]
    user@host# show
    ```

Configuring Connections to the Services' Directory

Use the following configuration statements to configure how SRC-ACP connects to the directory that contains information about services:

```
shared acp configuration ldap service-data {
    edge-congestion-point-dn edge-congestion-point-dn;
    backbone-congestion-point-dn backbone-congestion-point-dn;
    reload-congestion-points;
    congestion-points-eventing;
    server-address server-address;
    server-port server-port;
    dn dn;
    principal principal;
    password password;
    event-dn event-dn;
    directory-eventing;
    polling-interval polling-interval;
}
```

To configure connections to the directory that stores service information:

1. From configuration mode, access the configuration statement that configures SRC-ACP connections to the services' directory. In this sample procedure, the connections are configured in the config group.

    user@host# **edit shared acp group config configuration ldap service-data**

2. Specify the DN of the directory that contains information about network interfaces for edge congestion points.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set edge-congestion-point-dn** *edge-congestion-point-dn*

3. Specify the DN of the directory that contains information about network interfaces for backbone congestion point objects.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set backbone-congestion-point-dn** *backbone-congestion-point-dn*

4. (Optional) Specify whether SRC-ACP detects changes in the backbone congestion point for a service while SRC-ACP is operative.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set reload-congestion-points**

    Set this value only when you want to modify a congestion point.

5. (Optional) Enable directory eventing for congestion points.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set congestion-points-eventing**

6. Specify the list of primary and redundant servers that manage data for subscribers.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set server-address** *server-address*

7. Specify the TCP port for the directory.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set server-port** *server-port*

8. Specify the DN of the root of the directory.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set dn** *dn*

9. Specify the DN used to authorize connections to the directory.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set principal** *principal*

10. Specify the password used to authorize connections to the directory.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set password** *password*

11. Specify the DN of the directory that contains event information.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set event-dn** *event-dn*

12. (Optional) Enable directory eventing.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set directory-eventing**

13. Specify the time interval at which the SRC component polls the directory.

    [edit shared acp group config configuration ldap service-data]
    user@host# **set polling-interval** *polling-interval*

14. (Optional) Verify your configuration.

    ```
    [edit shared acp group config configuration ldap service-data]
    user@host# show
    ```

Configuring SRC-ACP Scripts and Classification

Use the following configuration statements to configure SRC-ACP scripts and classification:

```
shared acp configuration scripts-and-classification {
    script-factory-class script-factory-class;
    classification-factory-class classification-factory-class;
    classification-script classification-script;
    congestion-point-profile-script congestion-point-profile-script;
    extension-path extension-path;
}
```

To configure scripts and classification:

1. From configuration mode, access the configuration statement that configures SRC-ACP scripts and classification. In this sample procedure, the properties are configured in the config group.

    user@host# **edit shared acp group config configuration scripts-and-classification**

2. Specify the script factory class name.

    [edit shared acp group config configuration scripts-and-classification]
    user@host# **set script-factory-class** *script-factory-class*

3. Specify the congestion point classifier factory class name.

    [edit shared acp group config configuration scripts-and-classification]
    user@host# **set classification-factory-class** *classification-factory-class*

4. Specify the class name for congestion point classification.

    [edit shared acp group config configuration scripts-and-classification]
    user@host# **set classification-script** *classification-script*

5. Specify the class name for generating the congestion point DN by using the congestion point profile.

    [edit shared acp group config configuration scripts-and-classification]
    user@host# **set congestion-point-profile-script** *congestion-point-profile-script*

6. Specify the extension class path for classes not located in the */opt/UMC/acp/lib* directory.

   [edit shared acp group config configuration scripts-and-classification]
   user@host# **set extension-path** *extension-path*

7. (Optional) Verify your configuration.

   ```
   [edit shared acp group config configuration scripts-and-classification]
   user@host# show
   ```

Configuring SRC-ACP to Manage the Edge Network

To configure SRC-ACP to manage the edge network you must:

1. Configure network interfaces that represent locations of congestion points in the directory.

2. Configure guaranteed bandwidths for subscribers.

3. Assign network interfaces to subscribers.

4. Configure guaranteed bandwidths for services.

Configuring Network Interfaces in the Directory for the Edge Network

You must add network interfaces to the directory. For the edge network, you do so by specifying the network interfaces of the routers and the switches in the access network between subscribers and the SRC network.

Use the following configuration statements to configure a network interface:

shared admission-control device *name* {
    description *description*;
}

shared admission-control device *name* interface *name* {
    description *description*;
    upstream-provisioned-rate *upstream-provisioned-rate*;
    downstream-provisioned-rate *downstream-provisioned-rate*;
    upstream-background-bandwidth *upstream-background-bandwidth*;
    downstream-background-bandwidth *downstream-background-bandwidth*;
}

To configure the network interfaces of the routers and the switches in the access network:

1. From configuration mode, access the configuration statement that configures network interfaces.

   user@host# **edit shared admission-control device** *name*

   Enter the name of the network device.

2. (Optional) Specify a description for the network device.

   [edit shared admission-control device *name*]
   user@host# **set description** *description*

3. Specify the network interface.

   user@host# **edit shared admission-control device** *name* **interface** *name*

   Enter the name of the virtual router.

4. (Optional) Specify the provisioned bandwidth for the network interface.

   [edit shared admission-control device *name* interface *name*]
   user@host# **set upstream-provisioned-rate** *upstream-provisioned-rate*
   user@host# **set downstream-provisioned-rate** *downstream-provisioned-rate*

5. (Optional) Specify the background bandwidth for the network interface.

   [edit shared admission-control device *name* interface *name*]
   user@host# **set upstream-background-bandwidth** *upstream-background-bandwidth*
   user@host# **set downstream-background-bandwidth**
   downstream-background-bandwidth

   For information about background bandwidths, see *Allocating Bandwidth to Applications Not Controlled by SRC-ACP* on page 277.

6. (Optional) Verify your configuration.

   [edit shared admission-control device *name* interface *name*]
   user@host# **show**

Configuring Bandwidths for Subscribers

You must configure bandwidths for subscribers that SRC-ACP manages in the edge region of the network.

If the access network between the subscriber and the router uses ATM, and all the traffic coming from one DSLAM travels on a single virtual path, you do not need to provision bandwidths for each subscriber. In this case, SRC-ACP can derive the congestion points from the router (see *Deriving Edge Congestion Points* on page 275.)

However, if the access network uses a protocol other than ATM, you must provide the following information for each subscriber.

■ Provisioned downstream bandwidth

■ Provisioned upstream bandwidth

■ Actual downstream bandwidth for the current subscriber session

■ Actual upstream bandwidth for the current subscriber session

■ List of DNs of interfaces associated with congestion points

To configure bandwidths for subscribers:

1. From configuration mode, access the configuration statement that configures residential subscribers.

   user@host# **edit subscribers retailer** *name* **subscriber-folder** *folder-name* **subscriber** *name* **admission-control**

   For more information about configuring residential subscribers, see *SRC-PE Subscribers and Subscriptions Guide, Chapter 12, Configuring Subscribers and Subscriptions with the SRC CLI.*

2. (Optional) Specify the provisioned downstream bandwidth. This rate is used if the subscriber bandwidth settings are not provided by remote update (through the API for ACP) or by the downstream-sync-rate value.

   [edit subscribers retailer *name* subscriber-folder *folder-name* subscriber *name* admission-control]
   user@host# **set downstream-provisioned-rate** *downstream-provisioned-rate*

3. (Optional) Specify the provisioned upstream bandwidth. This rate is used if the subscriber bandwidth settings are not provided by remote update (through the API for ACP) or by the upstream-sync-rate value.

   [edit subscribers retailer *name* subscriber-folder *folder-name* subscriber *name* admission-control]
   user@host# **set upstream-provisioned-rate** *upstream-provisioned-rate*

4. (Optional) Specify the actual downstream bandwidth for the current subscriber session. If you do not set this value and it is not provided by remote update (through the API for ACP), then the downstream-provisioned-rate value is used.

   [edit subscribers retailer *name* subscriber-folder *folder-name* subscriber *name* admission-control]
   user@host# **set downstream-sync-rate** *downstream-sync-rate*

5. (Optional) Specify the actual upstream bandwidth for the current subscriber session. If you do not set this value and it is not provided by remote update (through the API for ACP), then the upstream-provisioned-rate value is used.

   [edit subscribers retailer *name* subscriber-folder *folder-name* subscriber *name* admission-control]
   user@host# **set upstream-sync-rate** *upstream-sync-rate*

Assigning Network Interfaces to Subscribers

You must assign to the subscriber object interfaces (including the router interfaces) for all congestion points between the subscriber and the router.

NOTE: You must define the interface in the directory before you can assign it to a residential subscriber (see *Configuring Network Interfaces in the Directory for the Edge Network* on page 306).

To assign an interface:

1. From configuration mode, access the configuration statement that configures residential subscribers.

   user@host# **edit subscribers retailer** *name* **subscriber-folder** *folder-name*
   subscriber *name* **admission-control**

   For more information about configuring residential subscribers, see *SRC-PE Subscribers and Subscriptions Guide, Chapter 12, Configuring Subscribers and Subscriptions with the SRC CLI*.

2. (Optional) Specify the DNs of interfaces associated with congestion points for this subscriber.

   [edit subscribers retailer *name* subscriber-folder *folder-name* subscriber *name* admission-control]
   user@host# **set congestion-points** [*congestion-points*...]

Configuring Bandwidths for Services in the Edge Network

Upstream and downstream bandwidths must be specified for services that SRC-ACP manages. You can obtain bandwidths for services in two ways:

- Provide static values through the directory.

- Allow the values to be provided through the SAE core API.

  For example, a business partner may need to specify the required values for a particular piece of content through the SAE core API.

To configure values for services:

1. From configuration mode, access the configuration statement that configures services.

   user@host# **edit services global sae-service** *name* **admission-control**

   For more information about configuring services, see *SRC-PE Services and Policies Guide, Chapter 1, Managing Services with the SRC CLI*.

2. (Optional) Specify the required downstream and upstream bandwidths.

   [edit services global sae-service *name* admission-control]
   user@host# **set required-downstream-bandwidth** *required-downstream-bandwidth*
   user@host# **set required-upstream-bandwidth** *required-upstream-bandwidth*

Configuring SRC-ACP to Manage the Backbone Network

To configure SRC-ACP to manage the backbone network, you must:

1. Configure network interfaces that represent locations of congestion points in the directory.

2. (Optional) Configure an action congestion point.

3. Configure guaranteed bandwidths for services.

4. Assign network interfaces to services.

5. Create congestion points in the directory.

6. Assign network interfaces to congestion points.

Configuring Network Interfaces in the Directory for the Backbone Network

You configure network interfaces in the directory in the same way for edge and backbone congestion points. However, for backbone congestion points, you can add only VRs and their interfaces. For information about this procedure, see *Configuring Network Interfaces in the Directory for the Edge Network* on page 306.

Extending SRC-ACP Congestion Points for the Backbone Network

You can extend SRC-ACP congestion points to initialize and execute applications defined in a backbone congestion point. SRC-ACP provides a service provider interface (SPI) to:

■ Create custom congestion point applications that authorize service activation and track service start and stop events.

■ Obtain congestion point information from remote update.

■ Retrieve congestion point status.

■ Track congestion point state.

The SPI for ACP provides a Java interface that a congestion point application implements. For information about the SPI for ACP, see the documentation in the SRC application library distribution in the folder *SDK/doc/acp*.

The implementation of the SPI for ACP can be a customized application that performs certain tasks, such as creating or removing congestion points on the router. SRC-ACP acts as an interface tracking plug-in, and interface tracking events are treated as remote updates for congestion points when they are created, modified, or removed.

SRC-ACP supports applications written in Java or Jython. For scripts written in Java, you must compile and package the implemented SPI for ACP to make it available for use by SRC-ACP. A Java implementation can include more than one Java archive (JAR) file.

To use congestion point applications with SRC-ACP, configure an action congestion point that references the script (see *Configuring Action Congestion Points* on page 311).

Configuring Action Congestion Points

You can define an application in a backbone congestion point so that SRC-ACP can execute it in a predefined manner. Backbone congestion points that are configured to run an application are called action congestion points. If you want to use an action congestion point to execute an application that requires real-time congestion point status, you must enable SRC-ACP state synchronization with the SAE (see *Configuring SRC-ACP Redundancy* on page 300).

Before you configure an action congestion point, make sure that you know the location of the application file.

Use the following configuration statements to configure action congestion points:

```
shared admission-control device name interface name {
    action-type (url | python | java-class | java-archive);
    action-class-name action-class-name;
    action-file-url action-file-url;
    action-parameters [action-parameters...];
}
```

To configure an action congestion point:

1. From configuration mode, access the configuration statement that configures network interfaces.

    user@host# **edit shared admission-control device** *name* **interface** *name*

    Enter the name of the network device and the name of the virtual router.

2. (Optional) Specify the file type of the application.

    [edit shared admission-control device *name* interface *name*]
    user@host# **set action-type** (url | python | java-class | java-archive);

3. (Optional) Specify the name of the class implementing the SPI.

    [edit shared admission-control device *name* interface *name*]
    user@host# **set action-class-name** *action-class-name*

4. (Optional) Specify the URL or the content of the script file.

    [edit shared admission-control device *name* interface *name*]
    user@host# **set action-file-url** *action-file-url*

5. (Optional) Specify the parameter as an attribute = value pair.

    [edit shared admission-control device *name* interface *name*]
    user@host# **set action-parameters** [*action-parameters*...]

6. (Optional) Verify your configuration.

```
[edit shared admission-control device name interface name]
user@host# show
```

Configuring Bandwidths for Services in the Backbone Network

You configure bandwidths for services in the same way for edge and backbone congestion points. For information about this procedure, see *Configuring Bandwidths for Services in the Edge Network* on page 309.

Configuring Congestion Points for Services in the Backbone Network

You must assign a congestion point to each service that SRC-ACP manages.

To configure values for services:

1. From configuration mode, access the configuration statement that configures services.

   user@host# **edit services global sae-service** *name* **admission-control**

   For more information about configuring services, see *SRC-PE Services and Policies Guide, Chapter 1, Managing Services with the SRC CLI.*

2. (Optional) Specify the backbone congestion points.

   [edit services global sae-service *name* admission-control]
   user@host# **set congestion-points** [*congestion-points...*]

   The backbone congestion point is defined in the format
   < -vrName- > / < -serviceName- > .

   ■ To allow the software to automatically define the congestion point, use the entry < -vrName- > / < -serviceName- > . When SRC-ACP starts operating, it will substitute the VR name and the service name from the request for service activation.

   ■ To restrict the congestion point to a specific VR or service, enter the actual VR name or service name.

Configuring Congestion Points in the Directory

To configure individual backbone congestion points:

1. From configuration mode, access the configuration statement that configures congestion points.

   user@host# **edit shared congestion-points profile** *name*

   Enter the name of the virtual router that supports the congestion point.

2. (Optional) Verify your configuration.

   ```
   [edit shared congestion-points profile name]
   user@host# show
   ```

Assigning Interfaces to Congestion Points

You must assign interfaces either to VRs or to individual services under the VRs. Services inherit interface assignments from the associated VR unless you assign an interface to the individual service. This network interface lists the DNs of interfaces associated with backbone congestion points.

Use the following configuration statements to configure interface assignments:

```
shared congestion-points profile name {
    interface [interface...];
}
```

To assign interfaces to congestion points:

1. From configuration mode, access the configuration statement that configures congestion points.

   user@host# **edit shared congestion-points profile** *name*

   Enter the name of the network device to which you want to assign the congestion point.

2. (Optional) Specify the interfaces associated with a congestion point for this subscriber.

   ```
   [edit shared congestion-points profile name]
   user@host# set interface interface
   ```

3. (Optional) Verify your configuration.

   ```
   [edit shared congestion-points profile name]
   user@host# show
   ```