

Configuring SRC-ACP to Manage the Backbone Network

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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.

- For backbone congestion points, add only VRs and their interfaces. For information about this procedure, see *Configuring Network Interfaces in the Directory for the Edge Network*.

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 SDK documentation in the `SDK+AppSupport+Demos+Samples.tar.gz` file on the Juniper Networks Web site at: <https://www.juniper.net/support/csc/swdist-erx/src.html> You can locate the files in the `SDK/doc/acp` directory.

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.

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).

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...];  
  action-file-name action-file-name;  
}
```

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 file. For action congestion point implementations written in Java of the url action type, configure the URL that specifies the location of the Java archives (*.jar* files) containing the action congestion point implementation. For other action types, you must load the action congestion point implementation with the action file name option.

```
[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) Load the local file that contains the action congestion point implementation. This file is the uncompiled Python source code or the compiled result of the Java file (binary *.class* or *.jar* file).

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

7. (Optional) Verify your configuration.

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

Configuring Bandwidths for Services in the Backbone Network

To configure bandwidths for services in the same way for edge and backbone congestion points:

- See Configuring SRC-ACP to Manage the Edge Network.

Configuring Congestion Points for Services in the Backbone Network

You must assign a congestion point to each service that SRC-ACP manages. When SRC-ACP receives a service authorization event, congestion points for a service session can be determined by:

- Congestion point classification
- Congestion point profiles

To configure congestion points with congestion point classification:

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

```
user@host# edit services global service name admission-control  
congestion-point-classification
```

For more information about services, see Overview of Services for the SRC Software.

2. Specify the backbone congestion point expression.

```
[edit services global service name admission-control congestion-point-classification]
user@host# set expression [expression...]
```

The syntax for a backbone congestion point expression is defined in the format `< NetworkDevice > / < NetworkInterface > / < InstanceID >` which maps to a congestion point.

- `< NetworkDevice >` —Network device listed in the directory.
- `< NetworkInterface >` —Network interface listed in the directory.
- `< InstanceID >` —Name of an instance of a congestion point that is automatically created.

For information about congestion point expressions, see Congestion Point Expressions. For information about the attributes that can be embedded in the expression, see “Plug-In Attributes for Use with Backbone Congestion Point Expressions” on page 5.

3. (Optional) Specify the backbone congestion point script.

```
[edit services global service name admission-control congestion-point-classification]
user@host# set script script
```

For information about congestion point functions, see “Using Functions for Backbone Congestion Point Classification Scripts” on page 8.

To configure congestion points with congestion point profiles:

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

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

For more information about services, see Overview of Services for the SRC Software.

2. (Optional) Specify the backbone congestion points. This value is ignored if you configure congestion points with congestion point classification.

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

The backbone congestion point is defined in the format `< -vrName- > / < -serviceName- >`, which locates a congestion point profile that contains a list of congestion points.

- 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.

Plug-In Attributes for Use with Backbone Congestion Point Expressions

These plug-in attributes must be available for service authorization and service tracking events.

accountingId

- Value of accountingUserId attribute.

ifRadiusClass

- RADIUS class attribute on the JUNOS interface.
- Value—String array
- Example—ifRadiusClass = “ acpe”

ifSessionId

- Identifier for RADIUS accounting on the JUNOS interface.

interfaceAlias

- Description of the interface.
- Value—Interface description that is configured on the JUNOS router with the **interface ip description** command
- Example—interfaceAlias = “ dhcp-subscriber12”

interfaceDescr

- Alternate name for the interface that is used by SNMP. This name is a system-generated name.
- Value
 - On a JUNOS router, the format of the description is
`ip<slot>/<port>.<subinterface>`
 - On the JUNOS routing platform, interfaceDescr is the same as interfaceName.
- Example—interfaceDescr = “ IP3/1 ”

interfaceName

- Name of the interface.
- Value
 - Name of the interface in your router CLI syntax
 - FORWARDING_INTERFACE for routing instance (used by traffic mirroring)
- Example—For JUNOS routers: interfaceName = “ fastEthernet6/0”
For JUNOS routing platforms: interfaceName = “fe-0/1/0.0”
For forwarding interface: interfaceName = “FORWARDING_INTERFACE”

loginName

- Subscriber's login name.
- Value—Login name
- Guidelines—The format of the login name varies. A loginName can be of form subscriber, domain\subscriber, subscriber@domain, or as otherwise defined by the login setup of the manager.
- Example—idp@idp

nasIp

- IP address of the router.
- Value—String

nasPort

- Port identifier of an interface.
- Value—Includes interface name and additional layer 2 information
- Example—nasPort = “ fastEthernet 3/1” (There is a space between fastEthernet and slot number 3/1 in the nasPort field.)

portId

- Identifier of VLAN or virtual circuit.
- Value—String; for a virtual circuit, use the format <VPI> / <VCI>

primaryUserName

- PPP login name or the public DHCP username.
- Value—Subscriber name
- Example—primaryUserName = “ peter”

radiusClass

- RADIUS class attribute of the service definition.
- Value—String
- Example—radiusClass = “ Premium”

serviceName

- Identifier of the service.

serviceScope

- Identifier of the service scope.

serviceSessionName

- Identifier of the service session.

serviceSessionTag

- Tag for the service session.

sspHost

- Name of host on which the SAE is installed.

substitutions.<substitution name>

- Substitution with the specified name passed in at service activation.

userIp

- IP address of the subscriber.
- Value—String

userMacAddress

- Media access control (MAC) address of the DHCP subscriber.
- Value—Valid MAC address
- Example—userMacAddress = “ 00:11:22:33:44:55”

userType

- Type of subscriber.

vrName

- Name of virtual router.
- Value—Virtual router name in the format <virtualRouter> @ <router>
- Example—vrName = “default@e_series5”

Using Functions for Backbone Congestion Point Classification Scripts

SRC-ACP provides the following functions to use in backbone congestion point classification scripts:

- **getNicProxy(name)**—Get the NIC proxy defined under the current SRC-ACP configuration group.
 - **name**—The name of the NIC proxy as defined under the SRC-ACP configuration group.
- **nicLookupSingle(name, nicKey, constraints)**—Perform a NIC lookup using the specified NIC key and constraints with the NIC proxy defined under the current SRC-ACP shared configuration group. The NIC key must uniquely identify a NIC value. If more than one result matches the same key, this function will raise the `AmbiguousKeyException` exception.
 - **name**—Name of the NIC proxy.
 - **nicKey**—String used as key for NIC lookup.
 - **constraints (optional)**—Map of NIC constraint information associated with the NIC key.

This function returns the lookup result as `(nicValue, intermediateValues)`, where `intermediateValues` is a map of the intermediate name and value pair.

- **nicLookup(name, nicKey, constraints)**—Perform a NIC lookup using the specified NIC key and constraints for the NIC proxy defined under the current SRC-ACP shared configuration group.
 - **name**—Name of the NIC proxy.
 - **nicKey**—String used as key for NIC lookup.
 - **constraints (optional)**—Map of NIC constraint information associated with the NIC key.

This function returns the lookup result as an array of `(nicValue, intermediateValues)`, where `intermediateValues` is a map of the intermediate name and value pair.

- **nicInvalidateLookup(name, nicKey, nicValue, constraints)**—Used to signal to a NIC proxy that a key/value pair (returned from one of the lookup methods) resulted in a failure when the value was used. If the NIC proxy has this result cached, it will be removed from the cache.
 - **name**—Name of the NIC proxy.
 - **nicKey**—A string used as NIC key that was passed to the previous lookup operation.
 - **nicValue**—The NIC value returned from the previous lookup operation.
 - **constraints(optional)**—Map of NIC constraint information associated with the NIC key.
- **slot(nasPortId)**—Collects the slot number from the `nasPortId` or `interfaceName`.

- `port(nasPortId)`—Collects the port number from the `nasPortId` or `interfaceName`.
- `l2id(nasPortId)`—Collects the layer 2 ID from the `nasPortId` (VLAN id or ATM vpi.vci).
- `escape(string)`—Replaces any slash with the escape sequence `\`.

Configuring Congestion Point Profiles in the Directory

If you are using congestion point classification, you do not need to configure congestion point profiles.

To configure individual backbone congestion point profiles:

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

```
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 Point Profiles

If you are using congestion point classification, you do not need to assign interfaces to congestion point profiles.

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 point profiles.

Use the following configuration statements to configure interface assignments:

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

To assign interfaces to congestion point profiles:

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

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

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

2. (Optional) Specify the interfaces associated with a congestion point profile 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
```

- Related Topics**
- Configuring SRC-ACP to Manage the Backbone Network (C-Web Interface)
 - Configuring SRC-ACP to Manage the Edge Network
 - Viewing Information About Services in the Backbone Network
 - Overview of SRC-ACP