



CHAPTER 9

Managing Subscribers

The SCE platform is subscriber aware, that is, it can relate traffic and usage to specific customers. This ability to map between IP flows and a specific subscriber allows the system to do the following:

- Maintain the state of each subscriber transmitting traffic through the platform
- Provide usage information for specific subscribers
- Enforce the appropriate policy on subscriber traffic (each subscriber can have a different policy)
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Information About Subscribers

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What is a Subscriber?

In the Service Control solution, a subscriber is defined as a managed entity on the subscriber side of the SCE Platform to which accounting and policy are applied individually.

The following table lists several examples of subscribers in Service Control solutions.

Table 9-1 **Subscriber Examples**

| The Subscriber | Subscriber Characteristics | Subscriber (Entity) Identified By |
|---|---|---|
| | Managed Entity | |
| DSL residential subscriber | DSL residential user IP address | The list of IP addresses is allocated by a Radius server |
| Cable residential subscriber | Cable residential user | IP address The list of IP addresses of the CPEs is allocated dynamically by a DHCP server |
| Owner of a 3G-phone that is subscribed to data services | 3G-phone owner | The MS-ISDN, which is dynamically allocated by a Radius server. |
| A corporate/enterprise customer of the service provider | The corporate/enterprise and the traffic it produces | The set of NAT-ed IP addresses, which are allocated statically |
| A CMTS | The CMTS and the broadband traffic of the Cable Modem users that connect to the Internet through the CMTS | <ul style="list-style-type: none"> • A range of IP addresses • A group of VLAN tags |
| SCMP subscriber | SCMP subscriber | <p>A combination of the following three items:</p> <ul style="list-style-type: none"> • IP address or range • Manager-Id of the SCMP peer device • Subscriber ID including the GUID <p>Each subscriber is assigned a Manager-Id based on the management entity that created the subscriber. The possible managers are the SM, CLI and an SCMP peer device.</p> |

Subscriber Modes in Service Control Solutions

Service Control solutions support several modes of handling subscribers:

- Subscriber-less mode
- Anonymous subscriber mode
- Static subscriber aware mode
- Dynamic subscriber aware mode



Note

Not all the Service Control solutions support all modes.

The most basic mode is **Subscriber-less** mode. In this mode, there is no notion of subscriber in the system, and the entire link where the SCE platform is deployed is treated as a single subscriber. Global Application level analysis (such as total p2p, browsing) can be conducted, as well as global control (such as limiting total p2p to a specified percentage). From a configuration stand point, this is a turnkey system and there is no need to integrate or configure the system from a subscriber perspective.

In **Anonymous subscriber** mode, analysis is performed on an incoming network ID (IP address), as the SCE platform creates an 'anonymous/on-the-fly' record for each subscriber. This permits analyzing traffic at an individual network ID level (for example, to identify/monitor what a particular 'subscriber' IP is currently doing) as well as control at this level (for example, to limit each subscriber's bandwidth to a specified amount, or block, or redirect). Anonymous-subscriber allows quick visibility into application and protocol usage without OSS integration, and permits the application of a uniform control scheme using predefined templates.

There are two possible **Subscriber Aware** modes. In these modes, subscriber IDs and currently used network IDs are provisioned into the SCE platform. The SCE platform can then bind usage to a particular subscriber, and enforce per-subscriber policies on the traffic. Named reports are supported (such as top subscribers with the OSS IDs), quota-tracking (such as tracking a subscriber-quota over time even when network IDs change) as well as dynamic binding of packages to subscribers. The two Subscriber Aware modes are:

- **Static subscriber aware** — The network IDs are static. The system supports the definition of static-subscribers directly to the SCE platform. This is achieved by using the SCE platform CLI, and defining the list of subscribers, their network IDs and policy information using interactive configuration or import/export operations.
- **Dynamic subscriber aware** — The network IDs change dynamically for each subscriber login into the Service Provider's network. In this case, subscriber awareness is achieved by integrating with external provisioning systems (either directly or through the SM) to dynamically learn network-ID to subscriber mappings, and distribute them to the SCE platforms.

Subscriber Mapping Limits

Refer to the following table for the maximum number of IP mappings permitted per single subscriber. An IP mapping may be either a single IP address or a range of addresses.

Table 9-2 Maximum Number of IP Mappings per Single Subscriber

| Mode | Pure IP |
|------------|---------|
| Standalone | 1024 |
| Cascade | 200 |

Aging Subscribers

Subscribers can be aged automatically by the SCE platform. 'Aging' is the automatic removal of a subscriber, performed when no traffic sessions assigned to it have been detected for a certain amount of time. The most common usage for aging is for anonymous subscribers, since this is the easiest way to ensure that anonymous subscribers that have logged-out of the network are removed from the SCE platform and are no longer occupying resources. Aging time can be configured individually for introduced subscribers and for anonymous subscribers.

Synchronizing Subscriber Information in a Cascade System

In a hot standby, cascade setup with full redundancy, the external provisioning server updates only the active SCE platform. However, the standby SCE platform must always be updated with the latest subscriber-related information (login, logout). This is required to minimize information loss in case of fail-over. In general, the only entity that is allowed to change subscriber information in the standby SCE platform is the active SCE platform. The standby SCE platform does not accept any subscriber operations (it returns a STANDBY_VIOLATION error instead), and it also does not generate any asynchronous subscriber notifications (such as pull-response or logout-notification).

There are only two exceptions to this rule:

- Standby SCE platform can change subscriber information of the default subscriber.
- Standby SCE platform can perform subscriber aging

Therefore, when working as a pair, the active SCE platform constantly updates the standby SCE platform with external data information. In addition, the standby SCE platform constantly requests external data information from the active SCE platform. The synchronization is bi-directional to ensure that the subscriber databases in both SCE platforms are identical.



Note

The external data is only relevant for introduced subscribers (both static and dynamic). It has no meaning for anonymous subscribers or the default subscriber. No more than two minutes of external data information will be lost by the standby SCE platform if a fail-over occurs.

The following subscriber information is considered as external data:

- subscriber name
- IP mappings
- tunables
- manager name
- aging time
- lease time
- is-static flag

Only the active SCE platform communicates with the SM. The SM is aware of the active/standby state of each SCE platform, and is also aware of a fail-over.

Specifically, this means the following:

- In push mode, the SM pushes events to the active SCE platform, which updates the standby SCE platform.
- In pull mode, only the active SCE platform pulls subscribers from the SM.
- The standby SCE platform can create anonymous subscribers based on the updates received from the active SCE platform, but does not generate pull-response for them.
- If SCE-SM connection failure, the SM handles the SCE recovery of the active SCE platform only. The active SCE platform propagates the information to the standby SCE platform.

Anonymous Groups and Subscriber Templates

An anonymous group is a specified IP range, possibly assigned a subscriber template. When an anonymous group is configured, the SCE platform generates anonymous subscribers for that group when it detects traffic with an IP address that is in the specified IP range. If a subscriber template has been assigned to the group, the anonymous subscribers generated have properties as defined by that template. If no subscriber template has been assigned, the default template is used.

The SCE platform can support a maximum of 1000 anonymous groups. Subscriber templates are identified by a number from 0-199.

Subscriber templates 1-199 are defined in csv formatted subscriber template files. However, template #0 cannot change; it always contains the default values.

If an anonymous group is not explicitly assigned a template, the group uses template #0.

Subscriber Files

- [Subscriber default csv file format, page 9-5](#)
- [Subscriber anonymous groups csv file format, page 9-6](#)

Individual subscribers, anonymous groups, and subscriber templates may all be defined in csv files. A csv file is a text file in a comma-separated-values format. Microsoft Excel™ can be used to view and create such files. The subscriber data is imported into the system using the appropriate CLI command. The SCE platform can also export the currently configured subscribers, subscriber templates and anonymous groups to csv-formatted files.

Subscriber csv files and subscriber template csv files are application-specific. Refer to the relevant application documentation for the definition of the file format.

Each line in a csv file should contain either a comment (beginning with the character '#'), or a list of comma-separated fields.

Subscriber csv files are application-specific, but a default format is defined by the SCE, which is used when the application does not choose to over-ride it. The application might over-ride the format when additional data is desired for each subscriber or subscriber template. Refer to the relevant Service Control Application documentation to see if the application defines a different format.

Subscriber template csv files are application-specific. Refer to the relevant Service Control Application documentation of the file format.

Anonymous groups csv files are not application specific. Their format is described below.

Subscriber default csv file format

Each line has the following structure:

name, mappings, packageId

- **Name** — is the subscriber name
- **Mappings** — contains one or more mappings, specifying the Tunnel IDs or IP addresses mapped to this subscriber. Multiple mappings are separated by semi-colon. Tunnel IDs and IP address/range cannot be specified for the same subscriber. The following mapping formats are supported:
 - IP address — in dotted decimal notation. Example: 10.3.4.5
 - IP address range — dotted decimal, followed by the amount of significant bits.



Note The non-significant bits (as determined by the mask) must be set to zero. Example: 10.3.0.0/16. Example for a bad range: 10.1.1.1/24 (Should be 10.1.1.0/24).

- **packageId** — the ID of the package to which the subscriber is assigned

Here is an example of a subscriber csv file in the default format:

```
# A comment line
sub7, 10.1.7.0/24, 1
sub8, 10.1.11.32, 1
sub9, 10.2.22.10, 2
sub10, 10.3.33.10, 2
sub11, 10.4.44.10, 1
sub12, 10.1.11.90; 10.3.0.0/16, 2
```

Subscriber anonymous groups csv file format

Each line has the following structure:

name, IP-range, template-index, manager-name (optional)

- **name** — is the anonymous group name
- **IP-range** — dotted decimal, followed by the amount of significant bits. Example: 10.3.0.0/16
- **template-index** — is the index of the subscriber template to be used by subscribers belonging to this anonymous group.
- **manager-name (optional)** — is either SM or the name of the SCMP peer. Use "SM" to pull subscribers from the SM (if it exists). If not specified, "SM" is assumed.

Here is an example of an anonymous groups csv file:

```
# Yet another comment line
anon1, 10.1.1.0/24, 1, 1
anon2, 10.1.2.0/24, 2, 2
anon3, 10.1.3.0/32, 3, 3
anon4, 10.1.4.0/24, 3, 3
anon5, 10.1.5.0/31, 2
anon6, 10.1.6.0/30, 1
anon7, 0.0.0.0/0, 1
```

Importing and Exporting Subscriber Information

- [Options, page 9-7](#)
- [How to Import Subscriber Information, page 9-7](#)
- [How to Export Subscriber Information, page 9-7](#)
- [How to Import a Subscriber Template, page 9-7](#)
- [How to Export a Subscriber Template, page 9-8](#)

Use the following commands to import subscriber data from csv files and to export subscriber data to these files:

- **subscriber import csv-file**
- **subscriber export csv-file**

- **subscriber anonymous-group import csv-file**
- **subscriber anonymous-group export csv-file**
- **subscriber template import csv-file**
- **subscriber template export csv-file**

These subscriber management commands are LineCard interface commands. Make sure that you are in LineCard Interface command mode.

Options

The following option is available:

- **filename** — the name of the csv file.

How to Import Subscriber Information

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- Step 1** From the SCE(config if)# prompt, type **subscriber import csv-file *filename*** and press **Enter**.
Imports the subscriber information from the specified file.
Imported subscriber information is added to the existing subscriber information. It does not overwrite the existing data.
If the information in the imported file is not valid, the command will fail during the verification process before it is actually applied.
-

How to Export Subscriber Information

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- Step 1** From the SCE(config if)# prompt, type **subscriber export csv-file *filename*** and press **Enter**.
Exports the subscriber information to the specified file.
-

How to Import a Subscriber Template

-
- Step 1** From the SCE(config if)# prompt, type **subscriber template import csv-file *filename*** and press **Enter**.
Imports the subscriber template from the specified file.
-

How to Export a Subscriber Template

-
- Step 1** From the SCE(config if)# prompt, type **subscriber template export csv-file** *filename* and press **Enter**. Exports the subscriber template to the specified file.
-

Removing Subscribers and Templates

- [How to Remove a Specific Subscriber, page 9-8](#)
- [How to Remove All Introduced Subscribers, page 9-9](#)
- [How to Remove a Specific Anonymous Subscriber, page 9-9](#)
- [How to Remove All Anonymous Subscriber Groups, page 9-9](#)
- [How to Remove All Anonymous Subscribers, page 9-9](#)
- [How to Remove All Subscriber Templates, page 9-10](#)
- [How to Remove Subscribers by Device, page 9-10](#)

Use the following commands to remove all subscribers, anonymous groups, or subscriber templates from the system.

- **no subscriber all**
- **no subscriber anonymous-group all**
- **clear interface linecard subscriber anonymous**
- **default subscriber template all**

Use the following commands to remove a specific subscriber or anonymous group from the system.

- **no subscriber name**
- **no subscriber anonymous-group name**

These subscriber management commands are LineCard interface commands (with the exception of the **clear interface linecard subscriber anonymous** command, which is a Privileged Exec command). Make sure that you are in LineCard Interface command mode, and that the SCE(config if)# prompt appears in the command line.

How to Remove a Specific Subscriber

Options

The following option is available:

- **subscriber-name** — the name of the subscriber to be removed

-
- Step 1** From the SCE(config if)# prompt, type **no subscriber name** *subscriber-name* and press **Enter**. Removes the specified subscriber.
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How to Remove All Introduced Subscribers

-
- Step 1** From the SCE(config if)# prompt, type **no subscriber all** and press **Enter**.
Removes all introduced subscribers.
-

How to Remove a Specific Anonymous Subscriber

Options

The following option is available:

- **group-name** — the name of the anonymous subscriber group to be removed

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- Step 1** From the SCE(config if)# prompt, type **no subscriber anonymous-group name** *group-name* and press **Enter**.
Removes the specified anonymous subscriber group.
-

How to Remove All Anonymous Subscriber Groups

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- Step 1** From the SCE(config if)# prompt, type **no subscriber anonymous-group all** and press **Enter**.
Removes all anonymous subscriber groups.
-

How to Remove All Anonymous Subscribers

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- Step 1** From the SCE# prompt, type **clear interface linecard 0 subscriber anonymous all** and press **Enter**.
Removes all anonymous subscribers.



Note The **clear subscriber anonymous** command is a **Privileged Exec** command.

How to Remove All Subscriber Templates

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- Step 1** From the SCE(config if)# prompt, type **default subscriber template all** and press **Enter**.
Removes all subscriber templates.
All anonymous subscribers will be assigned to the default subscriber template.
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How to Remove Subscribers by Device

- [How to Remove Subscribers from the SM, page 9-10](#)
- [How to Remove Subscribers from a Specified SCMP Peer Device, page 9-10](#)

You can remove all subscribers managed by a specified device. The device can be either of the following:

- The SM
- A specified SCMP peer device

How to Remove Subscribers from the SM

-
- Step 1** From the SCE(config if)# prompt, type **no subscriber sm all** and press Enter.
Clears all subscribers from the SM.
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How to Remove Subscribers from a Specified SCMP Peer Device

Options

The following option is available:

- **peer-device-name** — the name of the SCMP peer device from which to clear the subscribers.

-
- Step 1** From the SCE(config if)# prompt, type **no subscriber scmp name *peer-device-name* all** and press **Enter**.
Clears all subscribers from the specified SCMP peer device.
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Importing and Exporting Anonymous Groups

- [How to Import Anonymous Groups, page 9-11](#)
- [How to Export Anonymous Groups, page 9-11](#)

How to Import Anonymous Groups

Options

The following option is available:

- **filename** — name of the csv file.

-
- Step 1** From the SCE(config if)# prompt, type **subscriber anonymous-group import csv-file filename** and press **Enter**.
- Creates anonymous groups by importing anonymous subscribers from the specified csv file.
- Imported anonymous subscriber information is added to the existing anonymous subscriber information. It does not overwrite the existing data.
- The SCE platform can support a maximum of 1000 anonymous groups.
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How to Export Anonymous Groups

Options

The following option is available:

- **filename** — name of the csv file.

-
- Step 1** From the SCE(config if)# prompt, type **subscriber anonymous-group export csv-file filename** and press **Enter**.
- Exports all existing anonymous groups to the specified csv file.
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Monitoring Subscribers

- [How to Monitor the Subscriber Database, page 9-12](#)
- [Displaying Subscribers, page 9-13](#)
- [How to Display Subscriber Information, page 9-18](#)
- [Displaying Anonymous Subscriber Information, page 9-19](#)

The CLI provides several commands that allow you to monitor subscribers. These commands can be used to display information regarding the following:

- Subscriber Database
- All subscribers meeting various criteria
- Individual subscriber information, such as properties and mappings
- Anonymous subscribers

Subscribers may be introduced to the SCE platform via the SCE platform CLI or via the Subscriber Manager. The monitoring commands may be used to monitor all subscribers and subscriber information, regardless of how the subscribers were introduced to the system.

**Note**

These commands are all in Viewer mode. Make sure that you are in the proper mode and that the SCE> prompt appears in the command line. You must specify 'linecard 0' in these commands.

How to Monitor the Subscriber Database

- [How to Display the Subscriber Database Counters, page 9-12](#)
- [Clearing the Subscriber Database Counters, page 9-13](#)

Use the following commands to display statistics about the subscriber database, and to clear the “**total**” and “**maximum**” counters.

- **show interface linecard 0 subscriber db counters**

The following counters are displayed:

- Current number of subscribers
 - Current number of introduced subscribers
 - Current number of anonymous subscribers
 - Current number of active subscribers (with active traffic sessions)
 - Current number of subscribers with mappings
 - Current number of IP mappings
 - Current number of vlan mappings
 - Max number of subscribers that can be introduced
 - Max number of subscribers with mappings
 - Max number of subscribers with mappings date / time
 - Total aggregated number introduced
 - Total number of aged subscribers
 - Total number of pull events
 - Number of traffic sessions currently assigned to the default subscriber
- **clear interface linecard 0 subscriber db counters**

How to Display the Subscriber Database Counters

-
- Step 1** From the SCE# prompt, type **show interface linecard 0 subscriber db counters** and press **Enter**. Displays the subscriber database counters.
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Monitoring the Subscriber Database: Example

The following example shows the output from this command.

```
SCE#show interface linecard 0 subscriber db counters
Current values:
=====
Subscribers: 249999 used out of 249999 max.
Introduced/Pulled subscribers: 249999.
Anonymous subscribers: 0.
Subscribers with mappings: 249999 used out of 249999 max.
Single non-VPN IP mappings: 249999.
Non-VPN IP Range mappings: 0.
IP Range over VPN mappings: 0.
Single IP over VPN mappings: 0.
VLAN based VPNs with subscribers: 0 used out of 4000.
Subscribers with open sessions: 243562.
Subscribers with TIR mappings: 0.
Sessions mapped to the default subscriber: 2.
Peak values:
=====
Peak number of subscribers with mappings: 249999
Peak number occurred at: 15:54:06 UTC TUE May 13 2008
Peak number cleared at: 07:47:49 UTC SUN May 11 2008
Event counters:
=====
Subscriber introduced: 249999.
Subscriber pulled: 0.
Subscriber aged: 0.
Pull-request notifications sent: 0.
Pull-request by ID notifications sent: 0.
Subscriber pulled by ID: 0.
State notifications sent: 0.
Logout notifications sent: 0.
Subscriber mapping TIR contradictions: 0.
```

Clearing the Subscriber Database Counters

-
- Step 1** From the SCE# prompt, type **clear interface linecard 0 subscriber db counters** and press **Enter**. Clears the “total” and “maximum” counters.
-

Displaying Subscribers

- [Displaying Subscribers: All Current Subscriber Names, page 9-14](#)
- [Displaying Subscribers: By Subscriber Property or Prefix, page 9-14](#)
- [How to Display Subscribers: By Mapping \(IP Address or VLAN ID\), page 9-16](#)

You can display the names of all subscribers.

You can also display specific subscriber name(s) that meet various criteria:

- A subscriber property is equal to, larger than, or smaller than a specified value.
- Subscriber name matches a specific prefix or suffix.
- Mapped to a specified IP address range.
- Mapped to a specified VLAN ID.

Use the following commands to display subscribers:

- `show interface linecard 0 subscriber all-names`
- `show interface linecard 0 subscriber [amount] [prefix 'prefix'] [property 'propertyname' equals|greater-than|less-than 'property-val']`
- `show interface linecard 0 subscriber [amount] prefix 'prefix'`
- `show interface linecard 0 subscriber [amount] suffix 'suffix'`
- `show interface linecard 0 subscriber mapping IP 'iprange'`
- `show interface linecard 0 subscriber [amount] mapping intersecting IP 'iprange'`
- `show interface linecard 0 subscriber mapping VLAN-id 'VLAN-id'`

Displaying Subscribers: All Current Subscriber Names

You can display the names of all subscribers currently in the SCE subscriber database.

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber all-names** and press **Enter**.
 Displays the names of all subscribers currently in the SCE subscriber database.
-

Displaying Subscribers: By Subscriber Property or Prefix

You can search for all subscribers that match a specified value of one of the subscriber properties, or are greater than or less than the specified value. You can also search for all subscribers that match a specified prefix. You can also find out how many subscribers match any one of these criteria, rather than displaying all the actual subscriber names.

- [How to display subscribers that match a specified value of a subscriber property, page 9-14](#)
- [How to display subscribers that are greater than or less than a specified value of a subscriber property, page 9-15](#)
- [How to display subscribers that match a specified prefix, page 9-15](#)
- [How to display subscribers that match a specified suffix, page 9-15](#)
- [How to display the number of subscribers that match a specified value of a subscriber property, page 9-15](#)
- [How to display the number of subscribers that are greater than or less than a specified value of a subscriber property, page 9-16](#)
- [How to display the number of subscribers that match a specified prefix, page 9-16](#)

How to display subscribers that match a specified value of a subscriber property

Options

The following options are available:

- **propertyname** — name of the subscriber property to match
- **property-val** — value of that subscriber property to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber property *propertyname* equals *property-val*** and press **Enter**.

How to display subscribers that are greater than or less than a specified value of a subscriber property

Options

The following options are available:

- **propertyname** — name of the subscriber property to match
- **property-val** — value of that subscriber property to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber property *propertyname* greater-than/less-than *property-val*** and press **Enter**.

How to display subscribers that match a specified prefix

Options

The following options are available:

- **prefix** — subscriber prefix to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber prefix *prefix*** and press **Enter**.

How to display subscribers that match a specified suffix

Options

The following options are available:

- **suffix** — subscriber suffix to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber suffix *suffix*** and press **Enter**.

How to display the number of subscribers that match a specified value of a subscriber property

Options

The following options are available:

- **propertyname** — name of the subscriber property to match
- **property-val** — value of that subscriber property to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber amount property *propertyname* equals *property-val*** and press **Enter**.

How to display the number of subscribers that are greater than or less than a specified value of a subscriber property

Options

The following options are available:

- **propertyname** — name of the subscriber property to match
- **property-val** — value of that subscriber property to match

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber amount property *propertyname* greater-than/less-than *property-val*** and press **Enter**.
-

How to display the number of subscribers that match a specified prefix

Options

The following options are available:

- **prefix** — subscriber prefix to match

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber amount prefix *prefix*** and press **Enter**.
-

How to Display Subscribers: By Mapping (IP Address or VLAN ID)

- [How to display subscribers that are mapped to a specified IP address, or range of IP addresses, page 9-17](#)
- [How to display subscribers that are mapped to IP addresses that are included in a given IP address or IP range, page 9-17](#)
- [How to display subscribers that are mapped to a specified VLAN ID, page 9-17](#)
- [How to display subscribers with no mapping, page 9-17](#)
- [How to display the number of subscribers that are mapped to a specified VLAN ID, page 9-17](#)
- [How to display the number of subscribers with no mapping, page 9-18](#)

You can display the subscribers who are mapped to any of the following:

- A specified IP address, or range of IP addresses
- IP addresses intersecting a given IP address or IP range
- A specified VLAN ID
- no mapping

You can also display just the number of subscribers with a specified mapping, rather than listing the actual subscribers.

How to display subscribers that are mapped to a specified IP address, or range of IP addresses**Options**

The following options are available:

- **ip-range** — IP address (x.x.x.x) or range of IP addresses (x.x.x.x/y) to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber mapping IP** *ip-range* and press **Enter**.

How to display subscribers that are mapped to IP addresses that are included in a given IP address or IP range**Options**

The following options are available:

- **ip-range** — IP address (x.x.x.x) or range of IP addresses (x.x.x.x/y) to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber mapping included-in IP** *ip-range* and press **Enter**.

How to display subscribers that are mapped to a specified VLAN ID**Options**

The following options are available:

- **VLAN-id** — VLAN ID to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber mapping VLAN-id** *VLAN-id* and press **Enter**.

How to display subscribers with no mapping

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber mapping none** and press **Enter**.

How to display the number of subscribers that are mapped to a specified VLAN ID**Options**

The following options are available:

- **VLAN-id** — VLAN ID to match

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber amount mapping VLAN-id** *VLAN-id* and press **Enter**.

How to display the number of subscribers with no mapping

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber amount mapping none** and press **Enter**.
-

How to Display Subscriber Information

- [How to display a listing of subscriber properties, page 9-18](#)
- [How to display complete information for a specified subscriber, page 9-18](#)
- [How to display values of subscriber properties for a specified subscriber, page 9-19](#)
- [How to display mappings for a specified subscriber, page 9-19](#)
- [How to display OS counters for a specified subscriber, page 9-19](#)

You can display the following information about a specified subscriber:

- values of the various subscriber properties
- mappings (IP address or VLAN-ID)
- OS counters:
 - current number of flows
 - bandwidth

Use the following commands to display subscriber information:

- **show interface linecard 0 subscriber properties**
- **show interface linecard 0 subscriber name 'name'**
- **show interface linecard 0 subscriber name 'name' mappings**
- **show interface linecard 0 subscriber name 'name' counters**
- **show interface linecard 0 subscriber name 'name' properties**

How to display a listing of subscriber properties

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber properties** and press **Enter**.
-

How to display complete information for a specified subscriber

Use this command to display complete information for a specified subscriber, including all values of subscriber properties and mappings.

Options

The following options are available:

- **name** — subscriber name

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber name** *name* and press **Enter**.

How to display values of subscriber properties for a specified subscriber

Options

The following options are available:

- **name** — subscriber name

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber name** *name* *properties* and press **Enter**.

How to display mappings for a specified subscriber

Options

The following options are available:

- **name** — subscriber name

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber name** *name* **mappings** and press **Enter**.

How to display OS counters for a specified subscriber

Options

The following options are available:

- **name** — subscriber name

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber name** *name* **counters** and press **Enter**.

Displaying Anonymous Subscriber Information

- [How to display currently configured anonymous groups, page 9-20](#)
- [How to display currently configured templates for anonymous groups, page 9-20](#)
- [How to display current configuration for a specified anonymous group, page 9-20](#)
- [How to display subscribers in a specified anonymous group, page 9-20](#)
- [How to display all subscribers currently in anonymous groups, page 9-21](#)

- [How to display the number of subscribers in a specified anonymous group, page 9-21](#)
- [How to display the total number of subscribers in all anonymous groups, page 9-21](#)

You can display the following information regarding the anonymous subscriber groups:

- aging (see [How to Display Aging for Anonymous Group Subscribers, page 9-23](#))
- currently configured anonymous groups
- currently configured subscriber templates
- configuration of a specified anonymous group
- number of subscribers in a specified anonymous group, or in all anonymous groups

Use the following commands to display anonymous subscriber information:

- **show interface linecard 0 subscriber templates [index]**
- **show interface linecard 0 subscriber anonymous-group [all] [name 'groupname']**
- **show interface linecard 0 subscriber amount anonymous [name 'groupname']**
- **show interface linecard 0 subscriber anonymous [name 'groupname']**

How to display currently configured anonymous groups

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber anonymous-group all** and press **Enter**.
-

How to display currently configured templates for anonymous groups

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber templates** and press **Enter**.
-

How to display current configuration for a specified anonymous group

Options

The following options are available:

- **group-name** — name of the anonymous subscriber group

-
- Step 1** From the SCE> prompt, type **show interface linecard 0 subscriber anonymous-group name group-name** and press **Enter**.
-

How to display subscribers in a specified anonymous group

Options

The following options are available:

- **group-name** — name of the anonymous subscriber group

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber anonymous name** *group-name* and press **Enter**.

How to display all subscribers currently in anonymous groups

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber anonymous** and press **Enter**.

How to display the number of subscribers in a specified anonymous group

Options

The following options are available:

- **group-name** — name of the anonymous subscriber group

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber amount anonymous name** *group-name* and press **Enter**.

How to display the total number of subscribers in all anonymous groups

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber amount anonymous** and press **Enter**.

Configuring Subscriber Aging

- [How to Enable Aging for Anonymous Group Subscribers, page 9-22](#)
- [How to Enable Aging for Introduced Subscribers, page 9-22](#)
- [How to Disable Aging for Anonymous Group Subscribers, page 9-22](#)
- [How to Disable Aging for Introduced Subscribers, page 9-22](#)
- [How to Set the Aging Timeout Period for Anonymous Group Subscribers, page 9-22](#)
- [How to Set the Aging Timeout Period for Introduced Subscribers, page 9-23](#)
- [How to Display Aging for Anonymous Group Subscribers, page 9-23](#)
- [How to Display Aging for Introduced Subscribers, page 9-23](#)

As explained previously ([Aging Subscribers, page 9-3](#)), aging is the automatic removal of a subscriber when no traffic sessions assigned to it have been detected for a certain amount of time. Aging may be enabled or disabled, and the aging timeout period (in minutes) can be specified.

Aging can be configured separately for introduced subscribers and for anonymous subscribers.

Use the following commands to configure and monitor aging.

- **[no] subscriber aging**
- **subscriber aging timeout**
- **show interface linecard 0 subscriber aging**

How to Enable Aging for Anonymous Group Subscribers

Step 1 From the SCE(config if)# prompt, type **subscriber aging anonymous** and press **Enter**.

How to Enable Aging for Introduced Subscribers

Step 1 From the SCE(config if)# prompt, type **subscriber aging introduced** and press **Enter**.

How to Disable Aging for Anonymous Group Subscribers

Step 1 From the SCE(config if)# prompt, type **no subscriber aging anonymous** and press **Enter**.

How to Disable Aging for Introduced Subscribers

Step 1 From the SCE(config if)# prompt, type **no subscriber aging introduced** and press **Enter**.

How to Set the Aging Timeout Period for Anonymous Group Subscribers

Options

The following option is available:

- **aging-time** — the time interval, in minutes, after which an inactive subscriber will be aged.

Step 1 From the SCE(config if)# prompt, type **no subscriber aging anonymous timeout** *aging-time* and press **Enter**.

How to Set the Aging Timeout Period for Introduced Subscribers

Options

The following option is available:

- **aging-time** — the time interval, in minutes, after which an inactive subscriber will be aged.

Step 1 From the SCE(config if)# prompt, type **no subscriber aging introduced timeout** *aging-time* and press **Enter**.

How to Display Aging for Anonymous Group Subscribers

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber aging anonymous** and press **Enter**.

How to Display Aging for Introduced Subscribers

Step 1 From the SCE> prompt, type **show interface linecard 0 subscriber aging introduced** and press **Enter**.

Configuring the SCE Platform/SM Connection

- [Configuring the Behavior of the SCE Platform in Case of Failure of the SM, page 9-24](#)
- [Configuring the SM-SCE Platform Connection Timeout, page 9-24](#)

The user can configure the behavior of the SCE platform in case of failure of the Subscriber Manager (SM):

- If SM functionality is critical to the operation of the system — configure the desired behavior of the SCE platform if any loss of connection with the SM (may be due either to failure of the SM or failure of the connection itself).
- If SM functionality is not critical to the operation of the system — no action needs to be configured. In this case you can specify that the system operational-status of the SCE platform should be 'warning' when the link is down.

Configuring the Behavior of the SCE Platform in Case of Failure of the SM

Options

The following options are available:

- **action**—The specified action will be performed in case of loss of connection between the SCE platform and the SM.

Possible actions are:

- **force-failure** — Force failure of SCE platform. The SCE platform then acts according to the behavior configured for the failure state.
- **remove-mappings** — Remove all current subscriber mappings.
- **shut** — The SCE platform shuts down and quits providing service.
- **none** (default) — Take no action.
- **warning**—The system operational-status of the SCE platform should be 'warning' in case of loss of connection between the SCE platform and the SM. No action is taken.

To specify the action that the SCE platform will perform if the SCE-SM connection fails, use this command.

-
- Step 1** From the SCE(config if)# prompt, type **subscriber sm-connection-failure action [force-failure|none|remove-mappings|shut]** and press **Enter**.
-

To specify that the system operational-status of the SCE platform should be 'warning' if the SCE-SM connection fails, use this command.

-
- Step 1** From the SCE(config if)# prompt, type **subscriber sm-connection-failure warning** and press **Enter**.
-

Configuring the SM-SCE Platform Connection Timeout

You can also configure the timeout interval; the length of time that the SM-SCE platform connection is disrupted before a failed connection is recognized and the configured behavior is applied.

Options

The following option is available:

- **interval** — the timeout interval in seconds

-
- Step 1** From the SCE(config if)# prompt, type **subscriber sm-connection-failure timeout *interval*** and press **Enter**.

Configures the connection timeout.
