# Subscriber Policy Broker CLI Reference Guide, Release 6.40.01

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# CLI Overview

# 1.1 Command Line Interface

The Command Line Interface (CLI) available on Sandvine software or hardware elements provides:

- Operational and configuration modes
- Output filtering
- Tab completion
- Online help

**Note:**
Commands are updated and/or deprecated with Sandvine product releases. See the product release notes in conjunction with this guide.

## 1.1.1 The CLI Shell

Run CLI commands within the CLI shell (the CLI prompt).

You can run CLI commands directly on a Sandvine element or from an SSH session that logs onto an element. When on an element, at the default command prompt, enter `svcli`. You can also access the CLI using the command `cli`.

The CLI shell appears, with the prompt indicating the platform you are logged onto, such as PTS, SRP or SDE. For example:

```
Sandvine CLI.
Copyright 2013 Sandvine Incorporated. All rights reserved.

SRP>
```

```
Sandvine CLI.
Copyright 2013 Sandvine Incorporated. All rights reserved.

PTS>
```

```
Sandvine CLI.
Copyright 2013 Sandvine Incorporated. All rights reserved.

SDE>
```

The CLI defaults to operational mode, which is used to administer the system, display status and perform operations. To enter configuration mode type `configure`. The CLI shell changes:

```
SRP> configure

The CLI is now in CONFIGURATION mode.

SRP#
```

```
PTS> configure

The CLI is now in CONFIGURATION mode.

PTS#
```

```
SDE> configure

The CLI is now in CONFIGURATION mode.

SDE#
```

To compare the modes:

| | Operational Mode | Configuration Mode |
|---|---|---|
| prompt | The platform name followed by the "greater than" sign. For example: `SRP> PTS>SDE>`. | The platform name followed by the hash sign. For example:`SRP#PTS#SDE#`. |
| purpose | Administering the system. | Configuring the system. |
| available commands | `show`, `clear`, and some `set` commands, typically to do with SandScript or the database. | All operational commands and add, delete, commit, save, reset, restart, and set config commands. |
| allowed sessions | Unlimited.<br>1000 sessions maximum. | Only one session allowed. Session times out after 10 minutes of inactivity. |
| permissions | This is command-specific. | sv_admin only |

### 1.1.1.1 Operational Mode

You can use the CLI operational mode to run basic operational commands. Common commands are:

- ?—Displays online help
- add—Adds a configuration
- clear—Clears the terminal or a service
- configure—Enters configuration mode
- delete—Deletes a configuration
- exit—Exits the CLI
- history—Displays command history
- monitor—Auto-refreshes operational data
- reload—Reloads a configuration or SandScript
- restore—Restores counters to pre-cleared values
- set—Sets an operational variable which typically triggers some action
- show—Displays operational data
- techsupport—Collects system/service level information useful for debugging the machine

### 1.1.1.2 Configuration Mode

You can use the CLI configuration mode to configure the system.

Run the `configure` command from the operational mode to enter the configuration mode. The prompt changes to the name of the platform, with the hash symbol. For example:

```
PTS#
SRP#
SDE#
```

The commands available in the configuration mode include all operational mode commands in addition to commands for configuring the system.

To prevent conflicts, only one user can enter configuration mode on an element at a time. If a user is already in configuration mode, an error message appears when trying to switch between modes. If the configuration mode is inactive for 10 minutes, the CLI exits the configuration mode to revert to the operational mode. An output similar to this appears:

```
PTS> configure
The CLI is now in CONFIGURATION mode.
This configuration session will expire after 10 minutes of inactivity.
PTS#
The inactivity timer has expired, exiting configuration mode...
```

```
The CLI is now in OPERATIONAL mode.
PTS>
```

```
SRP> configure
The CLI is now in CONFIGURATION mode.
This configuration session will expire after 10 minutes of inactivity.
SRP#
The inactivity timer has expired, exiting configuration mode...
The CLI is now in OPERATIONAL mode.
SRP>
```

```
SDE> configure
The CLI is now in CONFIGURATION mode.
This configuration session will expire after 10 minutes of inactivity.
SDE#
The inactivity timer has expired, exiting configuration mode...
The CLI is now in OPERATIONAL mode.
SDE>
```

### Forcing Configuration Mode

Run this CLI command to force another user out of the configuration mode. The user who is forced out of the configuration mode loses any pending changes.

```
PTS> configure force
The CLI is now in CONFIGURATION mode. This configuration session will expire after 10 minutes
 of inactivity
```

```
SRP> configure force
The CLI is now in CONFIGURATION mode. This configuration session will expire after 10 minutes
 of inactivity
```

```
SDE> configure force
The CLI is now in CONFIGURATION mode. This configuration session will expire after 10 minutes
 of inactivity
```

A notification similar to this appears:

```
PTS#
The CLI was forced out of configuration mode by another user and is now in OPERATIONAL mode.
PTS>
```

```
SRP#
The CLI was forced out of configuration mode by another user and is now in OPERATIONAL mode.
SRP>
```

```
SDE#
The CLI was forced out of configuration mode by another user and is now in OPERATIONAL mode.
SDE>
```

**Note:**
The `configure force` notification appears only when you try to run a new command or press the **Tab** key.

### Configuration tables

Some configurations are stored in tables.Run the `add config *` or `add config service` CLI command to add a row to a table and also to add the specified configuration to the table. You must specify a value for every non-optional entry in the table.

### Applying configuration changes

The CLI saves configuration changes that you make using `set config` CLI commands, but does not apply the changes. Run the `show config pending` command to view the pending changes. Run the `show config *` command to view specific pending configuration changes. The - > symbol indicates the pending changes.

This example changes the subname:

```
name: SANDVINE-1
sub-name: SANDVINE-1 -> subname
stat-name:
```

This example shows change in a cluster name:

```
name: SANDVINE-SDE-1 -> cluster123
```

Run the `commit` CLI command to apply the configuration changes. The element automatically reloads, restarts, or reboots any required processes or elements, depending on the configuration change.

**Note:**
Schedule the system configuration during standard maintenance windows to prevent service impact or performance degradation.

After applying the configuration changes, the CLI switches to operational mode. If the configuration fails, the system rolls back to the previous configuration, restoring the system to its operational state.

In the event of roll back failure, alarm 79—Last reload failed— is raised and the system is in an indeterminate state.

Run the `exit` command to undo your changes or to exit the configuration mode.

An output similar to this appears if you exit the CLI with pending changes:

```
Exit configuration mode without committing changes? (y/n)
```

#### Reset config

Run the `reset` CLI commands to reset a configuration variable to its default value. For example:

```
reset config service diameter messages message-maximums incoming-queued
```

```
reset config service message-broker max-connections
```

#### Show config

Every `add config` and `set config` command has a corresponding `show config` command. For example:

```
set config service spb servers
show config service spb servers
```

See the CLI reference documentation for the corresponding `add config` or `set config` command for information about the command output.

## 1.1.2 Available CLI Commands

Press **Tab** at the CLI prompt to see which CLI commands are available.

The top level of the command structure appears with a brief description for each command. For example:

```
SDE>
?             Display online help
add           Add a user or some operational state
clear         Clear the terminal or a service
configure     Enter configuration mode
delete        Delete an operational record
exit          Exit the CLI
history       Display command history
monitor       Auto-refreshing operational data
reload        Reload configuration and policy
restore       Restore counters to pre-cleared values
set           Set an operational variable which typically triggers some action
show          Display operational data
```

```
techsupport   Collect system/service level information useful for debugging
              this machine
```

For the superuser, these additional commands are available:

```
configure       Enter configuration mode
delete          Delete a configuration variable
reboot          Set system reboot
reload          Reload
set             Set a configuration variable
shutdown        Shutdown the system immediately
```

To refine the output, enter a command and then press **Tab** twice. For example, if you refine the `show` command:

```
alarms                    Alarm status, history and information
cli                       Information related to the Command Line Interface
cluster                   Information about the SPB cluster
config                    System configuration
interface                 Information about network interfaces
network-element           SPB, PTS, or other elements on the network
network-element-cluster   Clusters on the network
service                   Information about system services
subscriber                Information about subscribers
system                    System version, status and resources
```

```
alarms             Alarm status, history and information
cli                Information related to the Command Line Interface
config             System configuration
log                The primary log file for the system
policy             Rules and constructs defined in policy
service            Information about system services
subscriber         Information about subscribers
system             System version, status and resources
usage-management   Information about Usage Management products
user               A list of users and privilege levels
```

**Note:**
See the *Quota Manager User Guide* for information about the `show usage-management` commands.

### Auto-complete Commands

Type part of a CLI command, then press **Tab**. The system auto-completes the last word based on the letters you entered. You can do this for each word of a command. If the command takes a parameter, such as an enumerated value or a range of integers, the system lists the valid inputs.

### Accessing Online Help

When you run any CLI command, add **?** at the end and press **Enter**. The system displays the online help for the command. For example, this CLI command displays the help for the `show system version` command.

```
show system version ?
```

If you want to use a literal question mark to set a configuration, and it is the only character at the end of the command, you must add the question mark with a backslash. For example:

```
set config my variable \?
```

```
set config service message-broker max-connections \?
```

**Note:**
In cases where the displayed help text is too long, press **q** to return to the command line.

### ID Parameters

Some commands have an ID parameter that applies the command upon a single instance of the information you request, such as a specific alarm model ID instead of all alarms. If you use an ID with a command, more detailed information is available.

**Permissions**

There are three levels of permission associated with CLI commands:

- sv_operator—Standard permission level with restricted ability to change the system
- sv_service—Standard permissions, with the ability to change some aspects of the system
- sv_admin—Full permissions to use any command and commit any changes through the CLI that the system allows

See the *SDE User Guide* for more information about user roles and permissions.

# 1.1.3 Output Filtering

To filter the output of any `show` command, run the command with a pipe character ( | ), a filter option and, in some cases, a regular expression to filter each line of output. The CLI allows only one level of filtering. You cannot use more than one pipe ( | ) symbol to string multiple filters together. The syntax is:

```
PTS> show <command> | {non-zero | include <regexp> | exclude <regexp> | begin <regexp> | grep
 [-v] regexp}


SRP> show <command> | {non-zero | include <regexp> | exclude <regexp> | begin <regexp> | grep
 [-v] regexp}
```

Where:

- `non-zero`—This is used for tables, specifies to only show output that has a value other than zero. You can optionally specify to filter non-zero output by column or row, so that either rows or columns that only contain zeroes are not output. This option does not take a regular expression.
- `include`—This specifies the inclusion of output matching the regular expression.
- `exclude`—This specifies the exclusion of output matching the regular expression.
- `begin`—This specifies to display the first line of output that matches the regular expression and also display all lines after the first matching line.
- `grep`—This searches for output that matches the regular expression, which is the same as using the include filter option. Using the `-v` option with grep has the same effect as using the exclude filter option.
- `regexp`—This is the regular expression to search for. Do not enclose the regular expression in quotes or double quotes and do not include trailing white spaces as these are taken as part of the regular expression.

```
SDE> show <command> | begin <regexp>
SDE> show <command> | exclude <regexp>
SDE> show <command> | grep [-v] <regexp>
SDE> show <command> | include <regexp>
SDE> show <command> | non-zero
```

| Filter | Description |
|---|---|
| begin | Displays all lines after and including the first that matches a regular expression. |
| exclude | Displays lines that do not match a regular expression. |
| grep | Displays lines that match a regular expression, which is the same as using the `include` filter option. Using the `-v` option with grep has the same effect as using the `exclude` filter option. |
| include | Displays lines that match a regular expression. |

| Filter | Description |
|---|---|
| non-zero | Displays only table columns and rows with at least one value other than zero. You can optionally specify to filter non-zero output by column or row, so that either rows or columns that only contain zeroes do not appear in the output. This option does not take a regular expression. |

Press the **Tab** key after the pipe symbol ( | ) to display a list of the available commands.

You can use any alphanumeric character to create regular expressions. To use these special characters as single-character patterns, precede the character with a backslash (\). These characters have special meaning when used in a regular expression:

| Character | Name | Description |
|---|---|---|
| . | Period | Matches any single character, including whitespace |
| * | Asterisk | Matches zero or more sequences of the pattern |
| + | Plus | Matches one or more sequences of the pattern |
| ? | Question mark | Matches zero or one sequence of the pattern |
| ^ | Caret | Matches the beginning of the input string |
| $ | Dollar | Matches the end of the input string |
| _ | Underscore | Matches a comma (,), left brace ({), right brace (}), left parenthesis, right parenthesis, the beginning of the input string, the end of the input string, or a space |
| [] | Square brackets | Designates a range of single-character patterns |
| - | Hyphen | Separates the end points of a range |

# 1.1.4 Commands Entered Incorrectly

The CLI displays error messages for commands that you enter incorrectly.

### Invalid Commands

When you run an invalid command, the CLI displays an error message and indicates the first invalid character with a caret symbol. For example:

```
PTS> show alarns
               ^
Invalid command

SRP> show alarns
               ^
Invalid command

SDE > show alarns
                ^
Invalid command
```

### Invalid Configuration Value

While running the `set config` commands, if you provide a value that is not valid, an invalid command message appears at the first invalid character. For example:

```
PTS# set config interface vlan
Incomplete command, try one of:
```

```
<vlan-id-list-or-none>   A comma-separated or dash-separated list vlan id or none, e.g. 200,
or 200,201,202 or 200-202
PTS# set config interface vlan a
                              ^
Invalid command.  Value must be a comma or dash-separated list of integers in the range 150 to
 3499 or none, e.g. 200, or 200,201,202 or 200-202.

SRP# set config service database port
Incomplete command, try one of:
<int:0..>   Port to connect to the database
SRP# set config service database port a
                                     ^
Invalid command. Value must be a 32-bit integer.

SDE# set config service dhcp  max-active-transactions abc
                                                      ^
Invalid command. Value must be a 32-bit integer.
```

#### Permission denied

If the CLI command exists, but you do not have permission to run it, a permission denied message appears.

#### Incomplete command

If you run an incomplete CLI command, the system displays an error message and possible options to complete the command. For example:

```
PTS> show system

Incomplete command, try one of:

licenses        All the licenses used by the system
information     Generic system information
indicators      State of the physical indicators (LEDs) on the system
processes       System processes running on the controller
modules         Details about the modules in the system
hardware        System hardware overview
diagnostics     Current diagnostic state of the system
blades          Blades plugged into each slot and information about each
services        Details regarding system services such as operational status, uptime, etc
resources       System resources which may impact the proper functioning of the system
nat             Active NAT configuration
firewall        Current configuration state for the firewall subsystem
storage         Details on storage devices
version         Installed products, versions and software packages
overview        An overview of what the PTS is doing
log             The primary log file for the system
history         System admin history
environmental   Environmentally monitored devices in the system

SRP> show system

Incomplete command, try one of:

environmental   Environmentally monitored devices in the system
hardware        System hardware overview
history         System admin history
indicators      State of the physical indicators (LEDs) on the system
information     Generic system information
licenses        All the licenses used by the system
log             The primary log file for the system
overview        SPB Overview
processes       System processes running on the controller
resources       System resources which may impact the proper functioning of the system
services        Details regarding system services such as operational status, uptime, etc
```

```
storage         Details on storage devices
version         Installed products, versions and software packages
```

```
SDE> show system

Incomplete command, try one of:

history     System admin history
log         The primary log file for the system
overview    SDE platform overview
resources   System resources which may impact the proper functioning of the
            system
services    Details regarding system services such as operational status,
            uptime, etc
version     Installed products and versions
```

## 1.1.5 Configuration versus Operational show Commands

The CLI includes two different types of `show` commands: `show config` command and `show` command, both of which are supported for the same feature or subsystem.

It is important to understand the difference between the two, as they display different types of information.

**show config**

Shows global configurations for a feature or subsystem. You can display the full configuration or refine the command to display a configuration group or a single configuration parameter.

Run the `show config policy` CLI command to display the SandScript policy configuration. For example:

```
SDE> show config policy
measurements
    max-subscriber-instances: 32
publish
    max-published-expression-rows: 200
    max-published-expressions    : 200
tables
    maximum-total-rows: 100000000
    max-row-bytes     : 20000000000
subsystem
    events-per-second: 100000
```

Run the `show config service top-talker` CLI command to display the full Top Talkers configuration. For example:

```
SRP> show config service top-talker
enabled    : false
policy-file: /usr/local/sandvine/etc/policy.conf
transaction
    timeout: 1440
schedule: 0 0 0 * * ?
```

Run the `show config policy publish` CLI command to display the configured values for publishing SandScript. For example:

```
SDE> show config policy publish
max-published-expression-rows: 200
max-published-expressions    : 200
```

Run the `show config service top-talker transaction` CLI command to display the Top Talkers configured transaction settings. For example:

```
SRP> show config service top-talker transaction

timeout: 1440
```

Run the `show config policy publish max-published-expressions` CLI command to display a specific configured value for SandScript measurements and publishing. For example:

```
SDE> show config policy publish max-published-expressions
max-published-expressions: 200
```

Run the `show config service top-talker transaction timeout` CLI command to display a specific configured transaction timeout for a single execution of the Top Talker search. For example:

```
SRP> show config service top-talker transaction timeout
timeout: 1440
```

**show command**

Displays operational data, such as live statistical data for the feature or subsystem. For example:

```
SDE> show policy measurement

UNIQUE-BY    MEASUREMENTS
======================
Name         Instances Average Peak Units
------------ --------- ------- ---- ------
counterTier          0       0    1 [none]


SRP> show subscriber attribute-definitions

Name Audited Reported Visible Notifiable IpNotifiable
---- ------- -------- ------- ---------- ------------
abc  [true]  [false]  [true]  [true]     [true]
```

# 1.2 CLI Command Structure

The CLI provides a textual interface to view the operational metrics of Sandvine elements and to configure the system.

## 1.2.1 Command Class

The first word in a CLI command defines the command class.

Press the **Tab** key, at the CLI prompt, to view top-level command classes:

```
PTS>
?            Display online help
add          Add a user or some operational state
clear        Clear the terminal or a service
configure    Enter configuration mode
delete       Clear run-time state
edit         Edit a file
exit         Exit the CLI
history      Display command history
monitor      Auto-refreshing operational data
ping         Ping a host (send an ICMP echo request)
reboot       Reboot the system immediately
reload       Reload configuration and policy
restart      Restart a service or application
restore      Restore counters to pre-cleared values
set          Set an operational variable which typically triggers some actions
shell        Exit the CLI to the shell
show         Display operational data
```

```
shutdown     Shutdown the system immediately
start        Start a service or application
stop         Stop a service or application
techsupport  Collect system/service level information useful for debugging this machine
traceroute   Display the route packets take to reach a host

SRP>
?            Display online help
add          Add a row to a configuration table
clear        Clear the terminal or a service
commit       Commit configuration changes
delete       Delete a row from a configuration table
exit         Exit configuration mode without committing changes
history      Display command history
load         Load a previously saved configuration
ping         Ping a host (send an ICMP echo request)
reboot       Reboot the system immediately
reload       Reload configuration and policy
reset        Reset a configuration variable back to its default value
restart      Restart a service or application
save         Save the running configuration
set          Set a configuration variable
show         Show configuration
shutdown     Shutdown the system immediately
start        Start a service or application
stop         Stop a service or application
traceroute   Display the route packets take to reach a host

SDE>

?             Display online help
add           Add a user or some operational state
clear         Clear the terminal or a service
configure     Enter configuration mode
delete        Delete an operational record
exit          Exit the CLI
history       Display command history
monitor       Auto-refreshing operational data
reload        Reload configuration and policy
restore       Restore counters to pre-cleared values
set           Set an operational variable which typically triggers some action
show          Display operational data
techsupport   Collect system/service level information useful for debugging this machine
```

A command class has a descendant structure built on command foundations, attribute(s), and parameter(s).

In this document, each command class is in a section and special commands appear in separate sections. Special commands are not considered as command classes because they have no descendant commands.

### 1.2.1.1 Command Foundation

The command foundation is a minimum of one word at the CLI prompt that combines at least one attribute and resolves to a command, whether or not there are more optional attributes or parameters available:

```
SDE> show alarms

PTS> show alarms

SRP> show alarms
```

| Section | Description |
|---|---|
| Syntax | The syntax section lists all the variations of the command foundation with available attributes and parameters. For example:<br>`show alarms`<br>`show alarms <id:0...>`<br>`show alarms all`<br>`show alarms history`<br>`show alarms model <id:1...>` |
| Attributes | The CLI concatenates the attributes with the command foundation and lists them in a table. |
| Subattributes | The CLI concatenates the subattributes with the attributes and lists them in a table. |
| Parameters | The CLI concatenates parameters with attributes, sub-attributes, and other parameters and lists them in a table. |
| Output | The output section lists and defines the output columns that the command foundation provides. |
| Reference | The reference section provides references for terminology expressed in command output. This is usually in the form of:<br>• Request for Comments (RFC)<br>• A Sandvine internal management information base (MIB)<br>• An industry-standard specification |

# 2

# CLI Commands

# 2.1 Management commands

Management commands operate with no parameters specific to an application.

## 2.1.1 clear

Clears the terminal or a service.

```
clear
```

## 2.1.2 commit

Available only in configuration mode, this command commits configuration changes and initiates a reload, restart, or reboot (as required) to activate the changes.

```
commit
```

**Note:**
Running the `commit` command can impact service. Therefore, perform configuration changes during a maintenance window.

## 2.1.3 configure

Puts the CLI into configuration mode.

Only one user can enter configuration mode at a time.

## 2.1.4 edit

```
edit service database authentication
```

## 2.1.5 exit

In configuration mode, this command returns the CLI to operation mode. In operational mode, this command exits the CLI.

```
exit
```

## 2.1.6 history

Lists the history of the commands that you executed with a timestamp for each command.

```
history
```

## 2.1.7 load config

Loads a previously saved local configuration.

This command is only available in configuration mode. The changes are pending until you run `commit` and can be seen by running `show config pending`. Any configuration changes made in the same session, before or after running the load command, overwrite the pending changes from the configuration file.

This command uses tab completion to show the available saved configuration names.

```
load config <configuration name>
```

## 2.1.8 ping

Used with IPv4 only, this command pings a specified host or IP address. Count is an optional integer that specifies the number of ping requests to send. This command sends ICMP echo requests to a specified destination.

```
ping <host> [count <count>]
```

**Example:**
```
PTS> ping localhost count 1
```

## 2.1.9 reboot

Reboots the system immediately.

You are prompted to confirm the reboot.

```
Confirm 'reboot'? (y/n):
```

## 2.1.10 reload

Although you can validate configurations with this command, you can also use it to reload configurations, SandScript, or maps.

```
reload
reload ip-overload-management-subnets
reload maps
reload validate
reload validate policy <file-path>
reload validate policy <file-path> subnets <file-path>
reload validate subnets <file-path>
reload validate subnets <file-path> policy <file-path>
```

| Attribute | Description |
|---|---|
| ip-overload-management-subnets | Reloads AlwaysShuntIpList and NeverShuntIpList. |
| maps | Reloads maps. |
| validate | Validates a reload. |
| validate policy | Validates SandScript policy. |
| validate subnets | Validates subnets. |

## 2.1.11 reload

Reloads configuration and policy.

```
reload
```

## 2.1.12 restart service

Runs the required command to restart the specified service. The service is stopped and then starts up again.

```
restart service application-server
restart service database
restart service ip-redundancy
restart service load-balancer
restart service message-broker
restart service msd
restart service nds
restart service scdpd
```

**Note:**
It is expected that when scdpd is restarted it may lead to dropped packets.

| Service | Impact of restarting service... |
|---|---|
| application-server | Complete SPB functionality is temporarily unavailable.<br>• Change notification is sent once the SMS is initialized or failover is complete.<br>• In case of the SMS cluster a failover is triggered if the application-server on SMS master restarts. |
| database | Restarts the database services.<br>Change notification is sent once the SMS is initialized or failover is complete. |
| ip-redundancy | The element temporarily stops mapping subscribers, but existing subscriber mappings remain active. |
| load-balancer | The load-balancing state is cleared. |
| message-broker | Restarts the message broker.<br>Can trigger SMS failover / cluster recovery. |
| msd | Temporarily, the CLI does not work and the Control Center is disconnected. |
| nds | The NDS server goes down temporarily.<br>All the current running reports are terminated. |
| scdpd | SNMP temporarily gets a timeout; the element doesn't send traps or poll values. The element cannot detect if an element is added to, or removed from, the cluster. Some cluster communication will work but not all. |

## 2.1.13 save config

Saves the running configuration. This command is only available in the configuration mode. The command creates a local backup of the current configuration, so that you can revert the changes, if required. The command does not save pending changes.

```
save config
save config <name>
```

| Command | Description |
|---|---|
| save config | Saves the configuration with a date and timestamp. For example, 2012-08-02T10:45:26-0400. |
| save config <name> | Saves the configuration with a name you specify. |

Run the `load config` command to revert to a saved configuration. This command supports tab completion and lists the available saved configurations. The command can take a few seconds to run. This command does not overwrite any changes that are pending in the session when you run the command.

## 2.1.14 shutdown

Shuts down the system immediately. The system halts and does not reboot.

## 2.1.15 start service

Run on of these commands to start the required service. All services start automatically when the system is started; you should only have to run these commands after administratively stopping a service.

```
start service application-server
start service database
start service ip-redundancy
start service load-balancer
start service message-broker
start service nds
start service scdpd
start service warm-standby <primary|standby>
```

| Service | Impact of starting service... |
|---|---|
| application-server | Complete SPB functionality is available. |
| database | The database services are available. |
| ip-redundancy | The subscriber mapping feature is acvtive. |
| load-balancer | Enables load balancing. |
| message-broker | The message broker feature is available.<br>The communication mechanism between the PTS element and the SPB server is available. |
| nds | The NDS server is available.<br>Data by all newtork elements logged into the NDS reports can be viewed. |
| scdpd | SNMP is active. SNMP sends traps and polls values. Cluster communication starts working. |
| warm-standby <primary\|standby> | The warm standby feature is available. The warm standby can be started on the primary service or on the database service. |

## 2.1.16 stop service

Run one of these commands to stop the required service. Many CLI commands will not work when any service is stopped.

```
stop service application-server
stop service database
```

```
stop service ip-redundancy
stop service load-balancer
stop service message-broker
stop service nds
stop service scdpd
stop service warm-standby
```

**Note:**
It is expected that when scdpd is restarted it may lead to dropped packets.

| Service | Impact of stopping service... |
|---|---|
| application-server | Complete SPB functionality is unavailable.<br>• Change notification is sent once the SMS is initialized or failover is complete.<br>• In case of the SMS cluster a failover is triggered if the application-server on SMS master stops. |
| database | Stops the database services.<br>Change notification is sent once the SMS is initialized or failover is complete. |
| ip-redundancy | The element stops mapping subscribers, but existing subscriber mappings remain active. |
| load-balancer | The load-balancing state is cleared. |
| message-broker | Stops the message broker.<br>Can trigger SMS failover / cluster recovery. |
| nds | The NDS server goes down.<br>All the current running reports are terminated. |
| scdpd | SNMP gets a timeout; the element doesn't send traps or poll values. The element cannot detect if an element is added to, or removed from, the cluster. Some cluster communication will work but not all. |
| warm-standby | The warm standby feature is not available. |

# 2.1.17 techsupport

Collects logs and system information from a Sandvine element into a tarball, which you can send to Sandvine Customer Support or its authorized partner for analysis.

**Note:**
To run this command, you must log in as a root user.

In the default operating mode, the `techsupport` command collects the basic set of information that you or the support team need to debug most common issues. In default mode, the command completes in less than 5 minutes and does not impact service. While the command runs, it displays the completion percentage. When the command completes, it displays the output file destination.

The element automatically removes output files from the destination directory after 3 days, therefore you should copy the files to another location.

```
techsupport
techsupport extended
techsupport extended private
techsupport extended verbose
techsupport extended verbose private
techsupport private
```

```
techsupport verbose
techsupport verbose private
```

| Attribute | Description |
|---|---|
| extended | Collects an extended set of data. This mode usually takes 30 minutes to complete, but can complete anywhere in the range of 10 minutes to 2 hours. This mode can impact service. |
| private | Masks information such as configurable IP addresses, usernames, and passwords. |
| verbose | Displays the commands that are running and any error messages encountered during the process. |

## 2.1.18 traceroute

Used with IPv4 only, traces the route or routes against or to a specified host or IP address. This command prints the route that packets take to the specified destination and provides information on bad transport.

```
traceroute <host>
```

## 2.1.19 update

Runs the svupdate command to install or upgrade software.

```
update
update uri <uri>
```

Where <uri> specifies an alternate site. Useful when the files to install are already downloaded.

The update process intiates LISU. If the LISU fails, you need to run `update` again.

## 2.1.20 set user default-shell

This a CLI command is used by an administrative user to change their default shell. Can be used by an administrative user to change any user's default shell.

```
set user default-shell <bash|cli>

set user <name> default-shell <bash|cli>
```

| Attribute | Descritption |
|---|---|
| default-shell <bash\|cli> | The default shell to use for new terminal sessions. |

## 2.1.21 Adding, Setting, and Deleting Users

This section describes the CLI commands used to create, set, and delete a user on the system.

### 2.1.21.1 add user

Creates a new user on the system and assigns them to the specified group. The group determines the user's permissions on the system.

```
add user <name> group <admin|service|operator>
```

**Note:**
To run this command, you must log in as a root user.

| Attribute | Description |
|---|---|
| user | The name of the user. |
| group | The group to assign this user to. Possible values include:<br>• admin—This is the highest privilege level and gives administrative users full access. These users can start or stop any application and edit files.<br>• service—Service users can start or stop some applications and edit run-time configuration files.<br>• operator—Operators have read-only privileges for accessing log files. |

### 2.1.21.2 set user

This command allows users and administrators to set or configure items such as password. Administrative users have access to all the user accounts and they can set passwords for everyone.

```
set user password
set user <name> password
set user <name> default-shell
```

| Attribute | Description |
|---|---|
| password | This is used to set your password. |
| <name> | The name of the user. |
| password | This is used when an administrator changes or sets password for another user. |
| default-shell | Set the default shell for a specific user. |
| bash\|cli | The default shell to use for new terminal sessions. |

### 2.1.21.3 delete user

This command deletes the specified user.

```
delete user <name>
```

**Note:**
To run this command, you must log in as a root user.

# 2.2 add

The add commands are used to add information into the SPB table.

## 2.2.1 add service id-allocation name

Creates a name-id mapping.

Adds a name along with a unique ID in SPB table.

```
add service id-allocation name <name>
```

Output:

```
Name created successfully.
```

# 2.3 add/set/delete config

The add/set/delete configuration commands are used with configuration tables.

Each row of the table is one set of configurations. The row key is a unique identifier for the row, which could be an IP address or a unique ID. The row key is a mandatory parameter.

You must be in configuration mode to run these commands.

## 2.3.1 add/set/delete config data-home

This group of commands configure the SPB hierarchy.

### 2.3.1.1 add config data-home

Adds a row to the table of SPB hierarchy settings.

```
add config data-home <int:1..> name <name> display-name <display-name> url <url>
add config data-home <int:1..> name <name> display-name <display-name> url <url> parent <parent>
```

Committing these commands requires a restart.

| Attribute | Description |
|---|---|
| data-home | A unique ID representing a datahome in the hierarchy. |
| name | The name of the datahome. This is the same as the SPB cluster name. |
| display-name | The display name of the datahome. |
| url | The URL that the message broker uses to send messages between sites. Use this format:<br>`ssl://<hostname>:2507`<br>Where <hostname> is the hostname of the datahome or IP address. |
| parent | The name of the datahome's parent in the hierarchy (optional). |

### 2.3.1.2 set config data-home

Alters the configuration of one row in the SPB hierarchy configuration table.

```
set config data-home <row> name <name>
set config data-home <row> display-name <display-name>
set config data-home <row> parent <parent>
set config data-home <row> url <url>
```

Committing these commands requires a restart.

| Attribute | Description |
|---|---|
| <row> | A unique ID representing a data-home in the hierarchy.<br>**Caution:** Do not change this after initial setup. |
| name | The name of the data home. This is the same as the SPB cluster name. |
| display-name | The display name of the data home. |
| parent | The name of the parent data home of a child data home. |
| url | The URL the message broker uses when sending messages between sites:<br>`ssl://<hostname>:2507`<br>Where <hostname> is the hostname of the data home or IP address. |

### 2.3.1.3 delete config data-home

Deletes the configuration for the specified row.

```
delete config data-home <row>
```

Committing this command requires a restart. Note that the message broker and the application server will also restart.

## 2.3.2 add/delete config service ip-user-map forwarding-address

Adds or deletes the IP and port for forwarding addresses for login or logout packets.

### 2.3.2.1 add config service ip-user-map forwarding-address

Configures forwarding login and logout packets to an IP and port.

```
add config service ip-user-map forwarding-address login <string>
add config service ip-user-map forwarding-address logout <string>
```

| Attribute | Description |
|---|---|
| login | The IP and port to forward login packets to (in quotes). |
| logout | The IP and port to forward logout packets to (in quotes). |

**Example:**
```
SRP# add config service ip-user-map forwarding-address login "10.10.10.10 1111"
```

### 2.3.2.2 delete config service ip-user-map forwarding-address

Deletes the configuration for the specified row, where row is the IP address as a string.

```
delete config service ip-user-map forwarding-address login <row>
delete config service ip-user-map forwarding-address logout <row>
```

## 2.3.3 add/set/delete config service ip-user-map dhcp

This group of commands configure IP mapping using DHCP.

## 2.3.3.1 add config service ip-user-map dhcp

Adds configuration for DHCP IP mapping.

```
add config service ip-user-map dhcp interface <string>
add config service ip-user-map dhcp interface <string> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
add config service ip-user-map dhcp login-attribute <string> value <value>
add config service ip-user-map dhcp login-attribute <string> value <value> expiry <expiry>
add config service ip-user-map dhcp attribute-mapping <string>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session> regex
 <regex>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session> regex
 <regex> regex-replace <regex-replace>
```

| Attribute | Description |
|---|---|
| interface | Interfaces on which to listen for DHCP packets. |
| capture-mode | The format in which packets are forwarded to the SPB. |
| attribute-mapping | DHCP header fields to map to subscriber attributes. |
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |
| login-attribute | Subscriber attributes that are set when a subscriber logs in. |
| expiry | A list of offsets from the current time when the attribute assignment should expire. For example:<br>`add config service ip-user-map dhcp login-attribute "tier" value "Gold" expiry "21 days 7 hours"`<br>You can combine: :<br>• *n* days<br>• *n* hours<br>• *n* minutes<br>• *n* seconds |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will rewrite the MAC address to accept packets forwarded from another device. |
| mirror | The SPB will accept packets forwarded out a mirror port or SPAN port of another device. |

## 2.3.3.2 set config service ip-user-map dhcp attribute-mapping

Alters the configuration of DHCP header fields to map to subscriber attributes.

```
set config service ip-user-map dhcp attribute-mapping <row> type <subscriber|session>
set config service ip-user-map dhcp attribute-mapping <row> regex <regex>
set config service ip-user-map dhcp attribute-mapping <row> regex-replace <regex-replace>
```

| Attribute | Description |
|---|---|
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |

| Parameter | Description |
|---|---|
| row | The DHCP header field set using `add config service ip-user-map dhcp attribute-mapping`. |
| subscriber | Applies to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| session | Applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session. |

### 2.3.3.3 set config service ip-user-map dhcp interface

Alters the configuration of the interfaces on which to listen for DHCP packets.

```
set config service ip-user-map dhcp interface <row> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

| Attributes | Description |
|---|---|
| interface | The IP address of the interface serves as the row key into the configuration table. |
| capture-mode | The format in which packets are forwarded to the SPB. |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

### 2.3.3.4 set config service ip-user-map dhcp login-attribute

Alters the configuration of subscriber attributes that are set when a subscriber logs in.

```
set config service ip-user-map dhcp login-attribute <row> value <value>
set config service ip-user-map dhcp login-attribute <row> expiry <expiry>
```

| Attribute | Description |
|---|---|
| login-attribute | A subscriber attribute to be set when a subscriber logs in. For example: tier, abuser. |

| Attribute | Description |
|---|---|
| value | Value to set the attribute to when the subscriber logs in. For example:<br>`set config service ip-user-map dhcp login-attribute tier value gold`<br>`set config service ip-user-map dhcp login-attribute abuser value true` |
| expiry | A list of offsets from the current time when the attribute assignment should expire. For example:<br>`set config service ip-user-map dhcp login-attribute tier expiry 21 days 7 hours`<br>You can combine:<br>• *n* days<br>• *n* hours<br>• *n* minutes<br>• *n* seconds |

### 2.3.3.5 delete config service ip-user-map dhcp

Deletes the configuration for the specified row.

```
delete config service ip-user-map dhcp attribute-mapping <row>
delete config service ip-user-map dhcp interface <row>
delete config service ip-user-map dhcp login-attribute <row>
```

## 2.3.4 add/set/delete config service ip-user-map radius

This group of commands configure IP mapping using RADIUS.

### 2.3.4.1 add config service ip-user-map radius

Adds configuration for RAIDUS IP mapping.

```
add config service ip-user-map radius accounting sub-name attribute <string>
add config service ip-user-map radius accounting sub-name attribute <string> regex <regex>
add config service ip-user-map radius accounting sub-name attribute <string> regex <regex>
regex-replace <regex-replace>
add config service ip-user-map radius attribute-definition <string> type
<date|integer|ip-address|octets|string|text>
add config service ip-user-map radius attribute-filter <string> regex <regex>
add config service ip-user-map radius attribute-filter-required <true|false>
add config service ip-user-map radius attribute-mapping <string>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
regex <regex>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
regex <regex> regex-replace <regex-replace>
add config service ip-user-map radius interface <string>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
capture-mode <normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
capture-mode <normal-udp|encapsulated-udp|layer-2-rewrite|mirror> reply <true|false>
add config service ip-user-map radius ip-attribute <string>
add config service ip-user-map radius login-attribute <string> value <value>
add config service ip-user-map radius login-attribute <string> value <value> expiry <expiry>
add config service ip-user-map radius logout-attribute <string> value <value>
add config service ip-user-map radius logout-attribute <string> value <value> expiry <expiry>
```

```
add config service ip-user-map radius packet-merging attribute <string> value <int>
add config service ip-user-map radius packet-merging dominant-packet
add config service ip-user-map radius packet-merging merge-key <string>
add config service ip-user-map radius session-tracking session-id-attribute <string>
```

Committing these commands requires a restart.

| Attribute | Description |
|---|---|
| interface | Interfaces on which to listen for RADIUS packets. |
| shared-secret | The RADIUS shared secret password. A password is required for each interface.<br>**Note:** This variable is only required for deployments using NAS replication. |
| capture-mode | The format in which packets are forwarded to the SPB. |
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. |
| session-tracking session-id-attribute | Specifies the RADIUS attributes to be used together to form the unique session identifier for STATEFUL tracking mode. You can choose these attributes for the unique per subscriber login session.<br>A standard RADIUS attribute example is to configure NAS-IP-Address together with Acct-Session-Id as the session ID, as:<br>`add config service ip-user-map radius session-tracking session-id-attribute 44`<br>A vendor-specific attribute example is to configure 3GPP2-Correlation-Id as the session ID:<br>`add config service ip-user-map radius session-tracking session-id-attribute "VSA 5535 44"` |
| packet-merging attribute | The list of RADIUS attributes that defines which RADIUS packets to merge. |
| packet-merging dominant-packet | The RADIUS attribute which takes precedence in the case of a merge conflict. |
| packet-merging merge-key | The RADIUS attributes which define the key used to match up RADIUS packets to merge. For example, to use the User-Name (1) to match up RADIUS packets for merging:<br>`add config service ip-user-map radius packet-merging merge-key 1` |
| attribute-definition | Add new custom RADIUS attributes, or override the data type of existing RADIUS attributes. |
| attribute-filter | RADIUS attribute used to filter which RADIUS attributes are processed. |
| attribute-filter-required | Indicates if an attribute filter is required. |
| attribute-mapping | RADIUS attributes to map to subscriber attributes. |
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| type | The data type; one of string, text, ip-address, integer, date or octets. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |

| Attribute | Description |
|---|---|
| login-attribute value | Subscriber attributes that are set when a subscriber logs in. |
| login-attribute | Subscriber attributes that are set when a subscriber logs out. |
| logout-attribute <string> value <value> | A list of values to set the attribute to when the subscriber logs out. |
| logout-attribute <string> value <value> expiry <expiry> | A list of values to set the attribute to when the subscriber logs out and their expiry time as an offset from the current time. |
| accounting sub-name attribute | RADIUS attribute, for example "4" or "VSA 5535 44". |
| ip-attribute | The RADIUS attribute to use as the subscriber IP address. For example, "4" or "VSA 5535 44" or "VSA 5535 44 TLV 4". |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

## 2.3.4.2 set config service ip-user-map radius accounting sub-name attribute

Configures how the SPB handles RADIUS accounting regex values.

```
set config service ip-user-map radius accounting sub-name attribute <row> regex <regex>
set config service ip-user-map radius accounting sub-name attribute <row> regex-replace
<regex-replace>
```

## 2.3.4.3 set config service ip-user-map radius interface

Configures the interfaces on which to listen for RADIUS packets.

```
set config service ip-user-map radius interface <row> shared-secret <shared-secret>
set config service ip-user-map radius interface <row> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
set config service ip-user-map radius interface <row> reply <true|false>
```

Committing these command requires a restart.

| Attributes | Description |
|---|---|
| capture-mode | The format in which packets are forwarded to the SPB. |
| shared-secret | The RADIUS shared secret password. A password is required for each interface. |
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB rewrits the MAC address in order to accept packets forwarded from another device. |
| mirror | The SPB will accept packets forwarded out a mirror port or SPAN port of another device. |

### 2.3.4.4 set config service ip-user-map radius attribute-definition

Specifies the data type of the new RADIUS attribute or the data type to override the existing RADIUS attribute data type. This variable is not case sensitive.

```
set config service ip-user-map radius attribute-definition <row> type
<string|text|ip-address|integer|date|octets>
```

| Parameter | Description |
|---|---|
| row | The RADIUS header field set using `add config service ip-user-map radius attribute-definition`. |
| type | These types are available:<br>• string<br>• text<br>• ip-address<br>• integer<br>• date<br>• octets |

### 2.3.4.5 set config service ip-user-map radius attribute-filter

RADIUS attribute used to filter which RADIUS attributes are processed.

```
set config service ip-user-map radius attribute-filter <row> regex <regex>
```

| Parameter | Description |
|---|---|
| row | The RADIUS header field set using `add config service ip-user-map radius attribute-filter`. |
| regex | Optional regular expression that value must match for mapping to occur. |

### 2.3.4.6 set config service ip-user-map radius attribute-mapping

Configures mapping RADIUS attributes to subscriber attributes.

```
set config service ip-user-map radius attribute-mapping <row> type <subscriber|session>
set config service ip-user-map radius attribute-mapping <row> regex <regex>
set config service ip-user-map radius attribute-mapping <row> regex-replace <regex-replace>
```

| Attribute | Description |
|---|---|
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| regex | Optional regular expression that value must match for mapping to occur. |
| regex-replace | Optional Boost-style format string to use for values to map. |

| Parameter | Description |
|---|---|
| row | The RADIUS header field set using `add config service ip-user-map radius attribute-mapping`. |
| subscriber | Applies to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| session | Applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session. |

## 2.3.4.7 set config service ip-user-map radius login/out-attribute

Configures subscriber attributes that are set when a subscriber logs in.

```
set config service ip-user-map radius login-attribute <row> value <value>
set config service ip-user-map radius login-attribute <row> expiry <expiry>
set config service ip-user-map radius logout-attribute <row> value <value>
set config service ip-user-map radius logout-attribute <row> expiry <expiry>
```

| Attribute | Description |
|---|---|
| value | A list of subscriber attributes to be set when a subscriber logs in or out. |
| expiry | A list of offsets from the current time when the attribute assignment should expire. A combination of: [n days] [n hours] [n minutes] [n seconds]. |

## 2.3.4.8 set config service ip-user-map radius packet-merging attribute

Configures RADIUS attributes and values that define which RADIUS packets must be merged.

```
set config service ip-user-map radius packet-merging attribute <row> value <int>
```

| Parameter | Description |
|---|---|
| attribute | The RADIUS attribute that defines which RADIUS packets must be merged |
| value | The value for the RADIUS attribute |

## 2.3.4.9 delete config service ip-user-map radius

Deletes the configuration for the specified row. This applies to the SPB only.

```
delete config service ip-user-map radius interface <row>
delete config service ip-user-map radius accounting sub-name attribute <row>
delete config service ip-user-map radius attribute-definition <row>
delete config service ip-user-map radius attribute-filter <row>
delete config service ip-user-map radius attribute-mapping <row>
delete config service ip-user-map radius login-attribute <row>
```

```
delete config service ip-user-map radius logout-attribute <row>
delete config service ip-user-map radius packet-merging attribute <row>
delete config service ip-user-map radius packet-merging merge-key <row>
delete config service ip-user-map radius session-tracking session-id-attribute <row>
```

Committing the `delete config service ip-user-map radius interface` command requires a restart.

# 2.3.5 add/set/delete config system log remote-server

These commands configure whether or not logs are sent to a remote server.

## 2.3.5.1 add config system log remote-server

Adds the configuration that sends logs to a remote server.

```
add config system log remote-server <server>[:<port>] type <alarms|snmp|svlog>
```

The IP, port, and type uniquely identifies the row.

| Attribute | Description |
|---|---|
| remote-server | IPv4 address or hostname of the remote server; with an optional port number (default 514). |
| type | These types are available:<br>• alarms—Sends a human-readable version of SNMP notifications to a remote server. Each message consists of the alarm model name and number, and a description.<br>• snmp—Sends SNMP notifications to a remote server as syslog messages, using the format defined in RFC 5675.<br>• svlog—Sends svlog messages to a remote server in addition to the local file<br>**Note:** SNMP and alarm severities map to the syslog priorities outlined in section 2 of RFC 5674. |

## 2.3.5.2 set config system log remote-server

Modifies the configuration created using the add `config system log remote-server` command.

```
set config system log remote-server <server>[:<port>] type <alarms|snmp|svlog>
```

## 2.3.5.3 delete config system log remote-server

Deletes the configuration that sends log messages to a remote server.

```
delete config system log remote-server <server>[:port] type <alarms|snmp|svlog>
```

# 2.3.6 add/set/delete config virtual-host

This group of commands configure VRRP (Virtual Router Redundancy Protocol) settings.

## 2.3.6.1 add config virtual-host

Configures VRRP connection redundancy settings.

```
add config virtual-host <int:1..255> ipv4-subnet <ipv4-subnet> interface <interface> priority
 <int:0..255>
add config virtual-host <int:1..255> ipv4-subnet <ipv4-subnet> interface <interface> priority
 <int:0..255> heartbeat-interval <int:1..30>
```

```
add config virtual-host <int:1..255> ipv4-subnet <ipv4-subnet> interface <interface> priority
 <int:0..255> heartbeat-interval <int:1..30> master-script <file-path>
add config virtual-host <int:1..255> ipv4-subnet <ipv4-subnet> interface <interface> priority
 <int:0..255> heartbeat-interval <int:1..30> master-script <file-path> backup-script <file-path>
```

| Attribute | Description |
|---|---|
| virtual-host | The virtual-host ID. |
| ipv4-subnet | An IPv4 subnet, in the form x.x.x.x/xx. For example, 10.10.10.10/01. |
| interface | The name of the interface corresponding to the external IP address configured for the server. For example, mgmt2. |
| priority | A priority in the range 0 - 255. A value of 255 indicates the default master and a value < 255 indicates a backup. |
| heartbeat-interval | The interval, in seconds, that the host sends heartbeat messages to other cluster members. Members consider the master to have failed at three times the configured number of seconds. |
| master-script | A script to execute when the node takes over mastership. |
| backup-script | A script to execute when the node loses mastership. |

### 2.3.6.2 set config virtual-host

Configures connection redundancy using VRRP.

```
set config virtual-host <row> interface <interface>
set config virtual-host <row> priority <int:0..255>
set config virtual-host <row> heartbeat-interval <int:1..30>
set config virtual-host <row> master-script <file-path>
set config virtual-host <row> backup-script <file-path>
```

| Attributes | Description |
|---|---|
| row | A unique identifier for the virtual host. |
| interface | The name of the interface corresponding to the external IP address configured for the server. |
| priority | A priority in the range 0 - 255. A value of 255 indicates the default master and a value < 255 indicates a backup. |
| heartbeat-interval | The interval, in seconds, that the host sends heartbeat messages to other cluster members. Members consider the master to have failed at three times the configured number of seconds. |
| master-script | A script to execute when the node takes over mastership. |
| backup-script | A script to execute when the node loses mastership. |

### 2.3.6.3 delete config virtual-host

Deletes the configuration for the specified row.

```
delete config virtual-host <row>
```

# 2.4 Overview of clear commands

The clear suite of commands clears aggregated data and services from the Sandvine environment.

When these clear commands are called:

```
clear alarms bridge-group
clear alarms counters
clear alarms ip-overload-management ip-shunt-failure
```

they set up a checkpoint so that subsequent calls to the same command are measured relative to the previous call to clear.

## 2.4.1 clear alarms counters

Forcibly clears all threshold-based alarms.

```
clear alarms counters
```

## 2.4.2 clear interface counters

Clears all network interface counters.

## 2.4.3 clear service message-broker connections

Clears specified connections based on broker names and connection IDs.

```
clear service message-broker connections broker <name> connection-id <string>
```

| Attribute | Function |
|---|---|
| broker | User-defined broker name. |
| connection-id | ID associated with the connection between a client and broker. |

## 2.4.4 clear service message-broker durable-subscriptions

Clears durable subscriptions that have expired or that a user wants to clear.

```
clear service message-broker durable-subscriptions
clear service message-broker durable-subscriptions network-elements
clear service message-broker durable-subscriptions network-elements broker <name>
clear service message-broker durable-subscriptions network-elements serial
<subscription-client-id>
clear service message-broker durable-subscriptions network-elements serial
<subscription-client-id> broker <name>
```

| Attribute | Description |
|---|---|
| broker | User specified broker name. |
| serial | User-defined client ID for subscription. |

# 2.5 delete

The delete commands lets you delete configuration or operational data.

## 2.5.1 delete service nat

Deletes all or the specified NAT mappings.

```
delete service nat mappings all
delete service nat private-ip-address <ip-address>
delete service nat private-ip-address <ip-address> site <int>
delete service nat public-ip-address <ipv4-address>
delete service nat public-ip-address <ipv4-address> low-port <int:0..65535> high-port
<int:0..65535>
```

| Attribute | Function |
|---|---|
| mappings all | Deletes all NAT mappings. |
| private-ip-address | Specifies a private IP address for which you want to delete the NAT mapping. Multiple mappings may exist. |
| site | Specifies the site number used to qualify the private IP address. |
| public-ip-address | Specifies a globally routable unicast IP address for which you want to delete the NAT mappings. Multiple mappings may exist. |
| low-port | Specifies the lower port number of the range associated with the NAT mapping. |
| high-port | Specifies the upper port number of the range associated with the NAT mapping. |

| Parameters | Description |
|---|---|
| ip-address | An IPv4 or IPv6 address. |
| int | An integer specifying the site number used to qualify the IP address. |
| ipv4-address | An IPv4 address. |
| int:0..65535 | A port number in the range 0 to 65535. |

## 2.5.2 delete subscriber ip-assignment

Deletes some or all subscriber IPs.

```
delete subscriber ip-assignment ip <ip-address>
delete subscriber ip-assignment ip <ip-address> site <site-value:0..>
delete subscriber ip-assignment ip session-identifier <session-identifier>
delete subscriber ip-assignment name <subscriber-name> ip <ip-address>
delete subscriber ip-assignment name <subscriber-name> ip <ip-address> site <site-value:0..>
delete subscriber ip-assignments
delete subscriber ip-assignments name <subscriber-name>
```

| Attribute | Function |
|---|---|
| ip | A user-specified IP address. |

| Attribute | Function |
|---|---|
| name | A user-specified subscriber name. |
| site | A user-specified site number. |
| session-identifier | A user-specified session identifier. |

## 2.5.3 delete subscriber name

Delete a subscriber or attribute assignment for a subscriber, for the specified name.

```
delete subscriber name <subscriber-name>
delete subscriber name <subscriber-name> attribute <attribute-name>
```

| Attribute | Function |
|---|---|
| name | A user-specified subscriber name. |
| attribute | A user-specified attribute name. |

## 2.5.4 delete network-element cluster

Removes network elements, and clusters of network elements, from the output of the `show network-element` CIL command.

```
delete network-element cluster <network-element-cluster-name>
delete network-element cluster <network-element-cluster-name> element <network-element-name>
delete network-element cluster <network-element-cluster-name> element <network-element-name>
statistic-definition <list>
```

| Attribute | Description |
|---|---|
| cluster | Name of the cluster. |
| element | Name of the element. |
| statistic-definition | Name of a statistic definition or * for all. |

## 2.5.5 delete service id-allocation

This command deletes locations within the SPB.

```
delete service id-allocation name <name>
delete service id-allocation id <integer>
delete service id-allocation file <filename>
```

| Attribute | Function |
|---|---|
| name | Deletes a location name in the SPB. |
| id | Deletes a location name associated with an ID specified in the SPB. |
| file | Deletes all location names and IDs mapped in the specified file. |

## 2.5.6 delete service reporting request-id

Use this command to cancel the NDS (or any other third-party) initiated, SPB report execution. Run the `delete service reporting request-status` command to determine the appropriate request-id.

```
delete service reporting request-id
```

# 2.6 set config

The `set config` commands are used to configure the system and are only available in configuration mode. Additional configuration commands are available under `add config`.

## 2.6.1 set config cli session-limit

Configures the maximum number of concurrent active CLI sessions. The range is 1 to 1000 and the default is 10.

```
set config cli session-limit <int:1..1000>
```

## 2.6.2 set config cluster

Configure the cluster compatibility version in a PTS contributing to cluster.

**Warning:**
Commiting the `set config cluster compatibility version` command requires SFCD restart.

```
set config cluster compatibility version <1|2>
set config cluster name <name>
set config cluster log-default

set config cluster stat-name <stat-name>
set config cluster sub-name <sub-name>
```

**Note:**

- In case of a configured SPB cluster, make sure that you first run these commands on the domain manager node. Run this CLI command to find the node that is designated as the domain-manager:

  ```
  show config cluster domain-manager
  ```

- In case of a new SPB cluster configuration, first set the domain manager by running this CLI command and then run the other commands:

  ```
  set config cluster domain-manager <ip-address>
  ```

- When compatibility version 2 is set, you need to configure the internal-service IP.

| Attribute | Description |
|---|---|
| compatibility version | Configures the PTS to use a different IP subnet for internal service (PTS to PTS) and external service (PTS to non-PTS) traffic. |
| log-default | Enable/disable the logging of statistics and heartbeats when the system is configured with the default cluster name. |

| Attribute | Description |
|---|---|
| name | Group PTS elements by name. |
| sub-name | Elements are considered local to one another if they are in the same sub-cluster. |
| stat-name | The name used to represent the cluster when writing stats. |

| Attribute | Description |
|---|---|
| domain-manager | IP of the domain manager message broker. |
| name | The cluster name of the SPB servers. |
| servers | Space separated list of server IP addresses in the cluster. Use this configuration on a database-only server. |

# 2.6.3 set config default-user enabled

Enables or disables the default SPB user.

```
set config default-user enabled <true|false>
```

In order for the Application Server to connect to the Message Server the default SPB user needs to be created.

# 2.6.4 set config files remote-config

Configures the location of the remote configuration file.

```
set config files remote-config <url>
```

# 2.6.5 set config nds

These commands configure the functionality of NDS.

## 2.6.5.1 set config nds applications classifier

Configures policy classifier reports.

```
set config nds applications classifier max-plot <int:0..>
```

| Attribute | Description |
|---|---|
| max-plot | Sets the maximum number of instances to plot in a policy expression overtime chart |

## 2.6.5.2 set config nds applications connections

Configures the connections report component in connection reports.

```
set config nds applications connections new <true|false>
set config nds applications connections peak <true|false>
```

| Attribute | Description |
|---|---|
| new | True to enable, false to disable the New Connections report component in connection reports |
| peak | True to enable, false to disable the Peak Connections report component in connection reports |

### 2.6.5.3 set config nds applications hosts

Configures the hosts report component in connection reports.

```
set config nds applications hosts new <true|false>
set config nds applications hosts peak <true|false>
```

| Attribute | Description |
|---|---|
| new | True to enable, false to disable the New Hosts report component in connection reports |
| peak | True to enable, false to disable the Hosts Connections report component in connection reports |

### 2.6.5.4 set config nds applications subscriber

Configures subscriber report settings.

```
set config nds applications subscriber min-bytes
set config nds applications subscriber rx-bandwidth
set config nds applications subscriber total-bandwidth
set config nds applications subscriber tx-bandwidth
set config nds applications subscriber usage-histogram max-bins
set config nds applications subscriber usage-histogram min-bandwidth
```

| Attribute | Description |
|---|---|
| min-bytes | Minimum bytes to use when counting subscribers; used to filter out subscribers |
| rx-bandwidth | True to enable, false to disable the Received Bandwidth report component in the Subscriber Bandwidth Usage reports |
| total-bandwidth | True to enable, false to disable the Total Bandwidth report component in the Subscriber Bandwidth Usage reports |
| tx-bandwidth | True to enable, false to disable the Transmitted Bandwidth report component in the Subscriber Bandwidth Usage reports |
| usage-histogram max-bins | Maximum number of bins allowed in the histogram usage reports |
| usage-histogram min-bandwidth | Minimum bytes to use in histogram usage reports to filter out subscribers with no traffic |

## 2.6.5.5 set config nds applications voip-qoe

Configures VoIP quality of experience (QoE) report settings.

```
set config nds applications voip-qoe cq-rfactor-threshold <int:0..100>
set config nds applications voip-qoe cq-threshold <float>
set config nds applications voip-qoe formula <arc_mos|g107_mos|pesq_mos|ttc_mos|wideband_mos>
set config nds applications voip-qoe g107-threshold <float>
set config nds applications voip-qoe lq-rfactor-threshold <int:0..100>
set config nds applications voip-qoe lq-threshold <float>
set config nds applications voip-qoe show-blocked-calls <true|false>
```

| Attribute | Description |
|---|---|
| cq-rfactor-threshold | R-factor threshold to classify a call as poor quality for CQ |
| cq-threshold | MOS score threshold to classify a call as poor quality for CQ |
| formula | Formula for calculating MOS scores from r-factor values |
| g107-threshold | MOS score threshold to classify a call as poor quality for G.107 |
| lq-rfactor-threshold | R-factor threshold to classify a call as poor quality for LQ |
| lq-threshold | MOS score threshold to classify a call as poor quality for LQ |
| show-blocked-calls | Enable/disable the Blocked VoIP Calls report component in VoIP reports |

## 2.6.5.6 set config nds caching

Configures server file cache settings.

```
set config nds caching config-duration <int>
set config nds caching enabled <true|false>
set config nds caching report-duration <int:-1..>
```

| Attribute | Description |
|---|---|
| config-duration | Length of time to cache parameter configuration values, in minutes |
| enabled | Enable/disable caching of report data |
| report-duration | Length of time to cache report data, in minutes |

## 2.6.5.7 set config nds configuration-pages

This command configures settings related to NDS configuration pages.

```
set config nds configuration-pages cache-manager csv <true|false>
set config nds configuration-pages cache-manager enabled <true|false>
set config nds configuration-pages cache-manager html <true|false>
set config nds configuration-pages cache-manager pdf <true|false>
set config nds configuration-pages cache-manager powerpoint <true|false>
set config nds configuration-pages cache-manager users admin <admin>
set config nds configuration-pages cache-manager users view <view>
set config nds configuration-pages color-preferences enabled <true|false>
set config nds configuration-pages color-preferences users admin <admin>
set config nds configuration-pages dsn-manager enabled <true|false>
set config nds configuration-pages dsn-manager restricted <true|false>
set config nds configuration-pages dsn-manager users admin <admin>
set config nds configuration-pages network-visibility enabled <true|false>
set config nds configuration-pages network-visibility restricted <true|false>
set config nds configuration-pages network-visibility users admin <admin>
set config nds configuration-pages policy-expression enabled <true|false>
set config nds configuration-pages policy-expression restricted <true|false>
set config nds configuration-pages policy-expression users admin <admin>
set config nds configuration-pages protocol-configuration enabled <true|false>
set config nds configuration-pages protocol-configuration no-flash <true|false>
set config nds configuration-pages protocol-configuration restricted <true|false>
set config nds configuration-pages protocol-configuration users admin <admin>
set config nds configuration-pages scheduler-manager enabled <true|false>
set config nds configuration-pages scheduler-manager restricted <true|false>
set config nds configuration-pages scheduler-manager users admin <admin>
set config nds configuration-pages system-configuration enabled <true|false>
set config nds configuration-pages system-configuration restricted <true|false>
set config nds configuration-pages system-configuration users admin <admin>
set config nds configuration-pages template-wizard enabled <true|false>
set config nds configuration-pages template-wizard restricted <true|false>
set config nds configuration-pages template-wizard users admin <admin>
set config nds configuration-pages time-zone enabled <true|false>
set config nds configuration-pages time-zone restricted <true|false>
set config nds configuration-pages time-zone users admin <admin>
set config nds configuration-pages user-preference enabled <true|false>
set config nds configuration-pages user-preference users admin <admin>
```

| Attribute | Description |
|---|---|
| csv | Shows or hides the CSV Cache tab. |
| enabled | Enables or disables the page in the navigation tree. |
| html | Shows or hides the Scheduled Reports Cache tab. |
| pdf | Shows or hides the PDF Cache tab. |
| powerpoint | Shows or hides the PowerPoint Reports Cache tab. |
| users admin | Generates a comma-separated list of users with permissions to clear the server file cache. |
| users view | Generates a comma-separated list of users who can view the file cache (Use * for all users). |
| restricted | Enables or disables restricted access to this page. |
| no-flash | Enables or disables the non-Flash version of the Protocol Configuration Manager page. |

## 2.6.5.8 set config nds data-source

Database connection settings.

```
set config nds data-source default <default>
set config nds data-source multihome enabled <true|false>
set config nds data-source timeout <int:1..>
```

| Attribute | Description |
|---|---|
| default | Default data source to use |
| multi-homeenabled | Enable/disable multi-home mode for report configuration |
| timeout | Length of time in seconds to wait for a reply from the data source |

## 2.6.5.9 set config nds email

Notification and email server settings.

```
set config nds email bounce-address <bounce-address>
set config nds email email-server <email-server>
set config nds email enabled <true|false>
set config nds email from-address <from-address>
set config nds email reply-to-address <reply-to-address>
```

| Attribute | Description |
|---|---|
| bounce-address | Email address to receive bounced emails for when the recipient address is invalid |
| email-server | Email server to use when sending notifications |
| enabled | Enable/disable email functions in NDS |
| from-address | Email address to use when sending notifications |
| reply-to-address | Email address to set in the reply-to field |

## 2.6.5.10 set config nds http-server

HTTP server settings.

```
set config nds http-server enabled <true|false>
set config nds http-server max-clients dynamic <int:1..25>

set config nds http-server max-clients static <int:1..500>

set config nds http-server port <int:1024..65535>
set config nds http-server protocol <http|https>
set config nds http-server security-config <file-path>

set config nds http-server ssl-config <file-path>
```

| Attribute | Description |
|---|---|
| enabled | Enable/disable the Apache server |
| max-clients dynamic | Number of supported Apache HTTP clients to serve dynamic requests |
| max-clients static | Number of supported Apache HTTP clients to serve static requests |
| port | Listening port of the HTTP server |
| protocol | Protocol accepted by the HTTP server |
| security-config | Server path to the Apache security configuration file |
| ssl-config | Server path to the Apache SSL configuration file |

## 2.6.5.11 set config nds logging

Server log settings.

```
set config nds logging audit level <debug|error|fatal|info|none|warn>
set config nds logging level <debug|error|fatal|info|none|warn>
set config nds logging performance level <debug|error|fatal|info|none|w
set config nds logging repository-path <repository-path>
set config nds logging wsdl <true|false>
```

| Attribute | Description |
|---|---|
| audit level | Granularity level for audit logs |
| level | Granularity level for NDS debug logs |
| performance | Granularity level for performance logs |
| repository-path | Path to where log files are stored on the reports server |
| wsdl | Enable/disable logging of WSDL requests and responses |

## 2.6.5.12 set config nds navigation

Reports to show in the navigation tree.

### 2.6.5.12.1 set config nds navigation favorite-reports

Configures the reports available in the navigation tree in the "Favorites" tab.

```
set config nds navigation favorite-reports display custom-reports <true|false>
set config nds navigation favorite-reports display personal-reports <true|false>
set config nds navigation favorite-reports display reports <true|false>
set config nds navigation favorite-reports enabled <true|false>
set config nds navigation favorite-reports xml-config <file-path>
```

| This attribute... | Enables or disables the... |
|---|---|
| custom-reports | Custom Reports folder in the navigation tree. |
| personal-reports | My Reports folder in the navigation tree. |
| reports | NDS Reports folder in the navigation tree. |
| enabled | Favorites navigation tab. |
| xml-config | This XML file is located on the server that defines which reports appear in the "Favorites" navigation tree. |

### 2.6.5.12.2 set config nds navigation all-reports

Configures the reports available in the navigation tree in the "All reports" tab.

```
set config nds navigation all-reports dns <true|false>
set config nds navigation all-reports  malicious-bandwidth <true|false>
set config nds navigation all-reports nat <true|false>
set config nds navigation all-reports network <true|false>
set config nds navigation all-reports network-interface <true|false>
set config nds navigation all-reports peer-to-peer <true|false>
set config nds navigation all-reports quality-of-experience <true|false>
set config nds navigation all-reports resource <true|false>
set config nds navigation all-reports subscriber basic <true|false>
set config nds navigation all-reports subscriber detail  <true|false>
set config nds navigation all-reports subscriber lookup  <true|false>
set config nds navigation all-reports subscriber top-talkers <true|false>
set config nds navigation all-reports subscriber-licensing <true|false>
set config nds navigation all-reports url <true|false>
set config nds navigation all-reports voip <true|false>
set config nds navigation all-reports voip-qoe <true|false>
```

| This attribute... | Enables or disables the... |
|---|---|
| dns | DNS reports. |

| This attribute... | Enables or disables the... |
|---|---|
| malicious-bandwidth | WDTM reports. |
| nat | NAT IP lookup reports. |
| network | Network reports. |
| network-interface | Network Interface reports. |
| peer-to-peer | Peer-to-Peer reports. |
| quality-of-experience | QoE reports. |
| resource | Resource Monitoring reports. |
| subscriber basic | Subscriber Basic reports. |
| subscriber detail | Subscriber Protocol reports. |
| subscriber lookup | Subscriber Lookup reports. |
| subscriber-licensing | Subscriber licensing report visibility. |
| subscriber top-talkers | Top talkers by Protocol reports. |
| url | Top URL reports. |
| voip | VoIP reports |
| voip-qoe | VoIP QoE reports |

### 2.6.5.12.3 set config nds navigation scheduled-reports

Configures the reports available in the navigation tree in the "Scheduled " tab.

```
set config nds navigation scheduled-reports enabled <true|false>
set config nds navigation scheduled-reports restricted-users <restricted-users>
```

| Attribute | Description |
|---|---|
| enabled | Enables and disables the "Scheduled" navigation tab. |
| restricted-users | Generates a comma-separated list of users with access to viewing cached reports only. |

## 2.6.5.13 set config nds presentation

Report presentation settings

```
set config nds presentation bytes-conversion <1000|1024>
set config nds presentation charting chart-height <int:1..>

set config nds presentation charting chart-width <int:1..>
set config nds presentation charting color-prefernce-file <file-path>
set config nds presentation charting magnify-enabled <true|false>
set config nds presentation csv compression <gzip|none >
set config nds presentation csv orientation <horizontal|vertical>
```

```
set config nds presentation data decimal-place <int:0..6>
set config nds presentation data default-iteration <int:1..>
set config nds presentation data sort-order <asc|desc>
set config nds presentation data thousands-separator <thousands-separator>
  set config nds presentation date format <format>

set config nds presentation date-time format <format>
set config nds presentation date-time peak-hour end <int:0..23>

set config nds presentation date-time peak-hour start <int:0..23>

set config nds presentation date-time show date <true|false>
set config nds presentation date-time show interval <true|false>
set config nds presentation date-time show timezone <true|false>
set config nds presentation default-protocol-map <file-path>
set config nds presentation forward-report enabled <true|false>
set config nds presentation forward-report path <file-path>
set config nds presentation pdf chart-height <int:1..>

set config nds presentation pdf chart-width <int:1..>

set config nds presentation pdf footer-text <footer-text>
set config nds presentation pdf orientation <landscape|portrait>
set config nds presentation pdf page-size <a4|letter|universal>
set config nds presentation pdf permission annotate <true|false>
set config nds presentation pdf permission copy <true|false>
set config nds presentation pdf permission modify <true|false>
set config nds presentation pdf permission print <true|false>
set config nds presentation powerpoint ignore-first-slide <true|false>
set config nds presentation powerpoint show-title <true|false>
set config nds presentation powerpoint template <default|blank|no-title|file-name:..>
```

| Attribute | Description |
|---|---|
| bytes-conversion | Base for byte unit conversion. |
| charting chart-height | Default height of the chart image |
| charting chart-width | Default width of the chart image |
| charting color-preference-file | Default color preference file to use |
| charting magnify-enabled | Enables/disables the dynamic chart magnification feature |
| csv compression | Use compression when downloading CSV files from download-only reports |
| csv orientation | Orientation of data table in CSV |
| date format | Sets the chart package-specific formatting string for formatting dates |
| decimal-place | Default number of decimal places to show in reports |

| Attribute | Description |
|---|---|
| default-iteration | Default number of report iterations to show on a page |
| sort-order | Default sort order for data |
| thousands-separator | Delimiter to use to format numbers larger than 3 digits (ie. 1,000) |
| date-time format | Sets the chart package-specific formatting string for formatting dates |
| date-time peak-hour end | Hour when peak hours end |
| date-time peak-hour start | Hour when peak hours start |
| date-time show date | Enable or disable date information in report subtitle when subtitle is hidden |
| date-time show interval | Enable or disable date interval display in the report |
| date-time show timezone | Enable or disable whether the time zone parameter is shown in the report configuration page and report subtitle |
| default-protocol-map | Default protocol configuration map to load |
| forward-report enabled | Enable or disable automatically loading a report on user login |
| forward-report path | Report to automatically load on user login |
| pdf chart-height | Height of the chart image |
| pdf hart-width | Width of the chart image |
| pdf footer-text | Footer message to place at the bottom of each page in the PDF |
| pdf orientation | Page orientation of the PDF document |
| pdf page-size | Page size to use for PDF document |
| pdf permission annotate | Enable or disable annotation support in the PDF document |
| pdf permission copy | Enable or disable copying content from the PDF document |
| pdf permission modify | Enable or disable modifying the content of the PDF document |
| pdf permission print | Enable or disable printing of the PDF document |
| ignore-first-slide | Do not modify the first slide in the template |
| show-title | Enable or disable the title slide |
| powerpoint template | PowerPoint template file to use when generating PowerPoint reports |

## 2.6.5.14 set config nds report-intervals

Reporting and logging interval settings.

```
set config nds report-intervals demographics <int:1..>

set config nds report-intervals interface <int:1..>

set config nds report-intervals policy-histogram <int:1..>

set config nds report-intervals policy-histogram-by-protocol <int:1..>

set config nds report-intervals published-expression <int:1..>
```

```
set config nds report-intervals subscriber basic <int:1..>

set config nds report-intervals subscriber detail <int:1..>
```

| Attribute | Description |
|---|---|
| demographics | Default minimum stats logging interval, in minutes |
| interface | Minimum logging interval for network port stats, in minutes |
| policy-histogram | Minimum logging interval for policy histogram stats, in minutes |
| policy-histogram-by-protocol | Minimum logging interval for policy histogram protocol stats, in minutes |
| published-expression | Minimum logging interval for published expression stats, in minutes |
| subscriber basic | Minimum logging interval for subscriber basic stats, in minutes |
| subscriber detail | Minimum logging interval for subscriber protocol stats, in minutes |

## 2.6.5.15 set config nds repositories

Server file repository settings.

```
set config nds repositories cache <file-path>
set config nds repositories etc <file-path>
set config nds repositories log <file-path>
set config nds repositories reports canned <file-path>
set config nds repositories reports classifier <file-path>
set config nds repositories reports custom <file-path>
set config nds repositories reports personal <file-path>
set config nds repositories var <file-path>
```

| Attribute | Description |
|---|---|
| cache | Server path of the temporary cache directory |
| etc | Server path for NDS configuration files |
| log | Server path for NDS log files |
| reports canned | Server path for canned reports |
| reports classifier | Server path for classifier template reports |
| reports custom | Server path for custom reports |
| reports personal | Server path for personal reports |
| var | Server path for NDS variable files |

## 2.6.5.16 set config nds scheduler

use this CLI command to configure Report Scheduler settings.

```
set config nds scheduler enabled <true|false>
set config nds scheduler server <server>
set config nds scheduler timeout <int:1..1440>
set config nds scheduler archive <1..20>
```

| Attribute | Description |
|---|---|
| enabled | Enables or disables the scheduler process. |
| server | Identifies the NDS server that generates scheduled reports. |
| timeout | Specifies the number of minutes that a report runs before timing out. |
| archive | Sets the default number of scheduled reports to archive. |

## 2.6.5.17 set config nds security

This series of set commands control various security settings.

```
set config nds security login-access anonymous <true|false>
set config nds security login-access local <true|false>
set config nds security login-access root  <true|false>
set config nds security login-access spbadmin  <true|false>
set config nds security pam-service <name>
set config nds security session-length <int:300..>

set config nds security trusted-ip-address <trusted-ip-address>

set config nds security trusted-ip-login <name>
```

| Attribute | Description |
|---|---|
| login-access anonymous | Enables or disables anonymous access to NDS. |
| login-access local | Enables or disables anonymous access for internal queries. The Scheduler process uses this command. |
| login-access root | Enables or disables root user access to NDS. |
| login-access spbadmin | Enables or disables spbadmin user access to NDS. |
| pam-service | Identifies the service name for PAM authentication. |
| session-length | Specifies the length, in seconds, of a user session. |
| trusted-ip-address | Generates a comma-delimited list of all remote WDTM PTS IP addresses that also generate alert emails. |
| trusted-ip-login | Specifies the username to use when accessing NDS from a trusted host. |

## 2.6.5.18 set config nds security-operations

Security Operations (secops) report settings.

```
set config nds security-operations company-name <company-name>

set config nds security-operations enabled <true|false>
set config nds security-operations recipients <recipients>

set config nds security-operations start-time <hh:mm>
```

| Attribute | Description |
|---|---|
| company-name | Company name to display in the secops report |
| enabled | Enable/disable the secops report |
| recipients | A comma-delimited list of email addresses to send the daily generated secops report |
| start-time | Time to generate the secops report |

### 2.6.5.19 set config nds web-debug

Web debug settings.

```
set config nds web-debug enabled <true|false>
set config nds web-debug error-level <error|false|stacktrace>
set config nds web-debug level <debug|error|fatal|info|none|warn>
set config nds web-debug show-progress <true|false>
set config nds web-debug timer <true|false>
set config nds web-debug type <type>
```

| Attribute | Description |
|---|---|
| enabled | Displays a debug button on the report toolbar to access the debug page of the report |
| error-level | Error message level that is displayed in the browser screen |
| level | Granularity level of the debug statements written to the web browser screen |
| show-progress | Enable/disable report progress information on the loading page |
| timer | Displays a timer on the report loading page |
| type | Comma-separated list of log types to output to the browser screen (all, none, event, audit, perf, web) |

## 2.6.6 set config usage-management quota-manager report

These commands enable/configure Network Demographics Server reports.

```
set config usage-management quota-manager report quota name
set config usage-management quota-manager report quota period
set config usage-management quota-manager report quota unit
set config usage-management quota-manager report plan attribute
set config usage-management quota-manager report plan enabled
set config usage-management quota-manager report plan name
set config usage-management quota-manager report thresholds
set config usage-management quota-manager report v2-51-enabled
```

| Attribute | Description |
|---|---|
| quota name | Configures quotas for Network Demographics reports.<br>Example: "LocalMonthlyUsage,RoamingNational,RoamingInternational"<br>Variable: svreports_um_quota_names. |
| quota period | The quota period with allowed values such as monthly, weekly, daily and hourly.<br>Example: "MonthlyQuota=monthly RoamingQuota=monthly".<br>Variable: svreports_um_quota_period |

| Attribute | Description |
|---|---|
| quota unit | The quota unit displayed on the y-axis of Network Demographics reports.<br>Example: "MonthlyQuota=bytes RoamingQuota=bytes"<br>Variable: svreports_um_quota_unit |
| plan attribute | SPB subscriber attribute name for subscriber plan; default is "Plan" if all quotas have same plan attribute name. It also can be something like "MonthlyQuota=PlanAttribute1 RoamingQuota=PlanAttribute2".<br>Variable: svreports_um_quota_attr_plan_defn |
| plan enabled | Enables the Network Demographics per-plan report. Acceptable values: false \| true.<br>Variable: svreports_report_um_quota_plan_enabled |
| plan name | Plan names for the per-plan report.<br>Example: "MonthlyQuota=Gold,Silver RoamingQuota=Gold,Bronze"<br>Variable: svreports_um_quota_attr_plan_values |
| thresholds | The Network Demographics report subscriber threshold in format "10 20 100".<br>Variable: svreports_um_quota_attr_threshold_values |
| v2-51-enabled | Determines whether or not Quota Manger 2.51 reports are generated. Acceptable values: true \| false. |
| ReserveEnabled | Enables reservation-related reports. Acceptable values: false \| true. |

# 2.6.7 set config usage-management quota-manager usage-records

These commands enable/configure usage records.

```
set config usage-management quota-manager usage-records enabled false|true
set config usage-management quota-manager usage-records report-total-bytes-only enabled
false|true
set config usage-management quota-manager usage-records duration <duration>
set config usage-management quota-manager usage-records ftp enabled false|true
set config usage-management quota-manager usage-records ftp host <host>
set config usage-management quota-manager usage-records ftp password <password>
set config usage-management quota-manager usage-records ftp port <int:1..65535>
set config usage-management quota-manager usage-records ftp remote-directory <remote-directory>
set config usage-management quota-manager usage-records ftp user <user>
set config usage-management quota-manager usage-records quota  <quota>
```

| Attribute | Description |
|---|---|
| enabled | Enables usage detail record generation on the SPB.<br>Variable: subscriber_usage_reporting_run |
| report-total-bytes-only enabled | The usage fields displayed on the Quota Manager usage report.<br>Variable: subscriber_usage_reporting_output_total_bytes_only |
| duration | Usage detail report generate duration, either "1 day" or "1 hour".<br>Variable: subscriber_usage_reporting_duration |
| ftp enabled | Enables FTP transfer of the usage detail records.<br>Variable: subscriber_usage_ftp_enabled |
| ftp host | The hostname for the usage detail record external FTP server.<br>Variable: subscriber_usage_ftp_host |
| ftp password | The password for the usage detail record external FTP server.<br>Variable: subscriber_usage_ftp_password |

| Attribute | Description |
|---|---|
| ftp port | The port for the usage detail record external FTP server; default is 21.<br>Variable: subscriber_usage_ftp_port |
| ftp remote directory | Configures the usage detail record storage directory on the external FTP server.<br>Variable: subscriber_usage_ftp_remote_directory |
| ftp user | The username for the usage detail record external FTP server.<br>Variable: subscriber_usage_ftp_login |
| quota | Quotas output in the usage detail report.<br>Example: "LocalMonthlyUsage RoamingNational"<br>Variable: subscriber_usage_reporting_um_quota_names |

## 2.6.8 set config security enabled

Configures whether calls to the Subscriber API will be authenticated.

```
set config security enabled <true|false>
```

## 2.6.9 set config service api web schema-validation enabled

Enables or disables web-services request schema validation.

```
set config service api web schema-validation enabled <true|false>
```

## 2.6.10 set config service api web stats-collection

Configures the web API statistics collection variables.

```
set config service api web stats-collection period <int:0..>
set config service api web stats-collection recovery-threshold <int:0..>
```

| Attribute | Description |
|---|---|
| period | The amount of time that the periods may be skewed by when the PTS publishes |
| recovery-threshold | The amount of time, in seconds, to wait for statistics before considering them expired |

## 2.6.11 set config service application-server bind-address

Configure the bind-address for the application server.

```
set config service application-server bind-address <ip-address>
```

where ip-address can be an IPv6 or an IPv4 address.

Committing changes to this command requires restarting the application server.

## 2.6.12 set config service application-server enabled

Enables or disables whether the application server will start on boot.

```
set config service application-server enabled <true|false>
```

Committing changes to this command requires restarting the application server.

## 2.6.13 set config service application-server keystore

Configures the location of the keystore used by the application server.

```
set config service application-server keystore <file-path>
```

| Parameter | Description |
|---|---|
| <file-path> | The path to a local file. |

## 2.6.14 set config service application-server servlet

Configures the SPB application server servlet's settings.

```
set config service application-server servlet bind-address <ip-address>
set config service application-server servlet https enabled <true|false>
set config service application-server servlet https port <int:0..>
set config service application-server servlet https max-sessions <int:25..>

set config service application-server servlet http enabled <true|false>
set config service application-server servlet http port <int:0..>
set config service application-server servlet http max-sessions <int:25..>
```

Committing these command requires a restart.

| Attribute | Description |
|---|---|
| bind-address | The bind-address for the servlet as an IPv6 or IPv4 address |
| https enabled | Enables or disables HTTPS |
| https port | Sets the port for HTTPS |
| https max-sessions | Sets the maximum value of the HTTPS thread/sessions. Default is 25. |
| http enabled | Enables or disables HTTP |
| http port | Sets the port for HTTP |
| http max-sessions | Sets the maximum value of the HTTP thread/sessions. Default is 25. |

# 2.6.15 set config service attribute-archiver

Configures the attribute archiver. The subscriber attribute archiver runs each day at midnight by default.

```
set config service attribute-archiver enabled <true|false>
set config service attribute-archiver schedule <schedule>
```

| Attributes | Description |
|---|---|
| enabled | Enables or disables the attribute-archiver |
| schedule | Configures the schedule for the attribute-archiver |

**Scheduling**

Scheduling is set in an expression similar to Unix. The cron expression comprises these required and optional fields, separated by whitespace:

| Field meaning | Allowed values | Allowed special characters |
|---|---|---|
| seconds | 0-59 | , - * / |
| minutes | 0-59 | , - * / |
| hours | 0-23 | , - * / |
| day-of-month | 1-31 | , - * / ? L W |
| month | 1-12 or JAN-DEC | , - * / |
| day-of-week | 1-7 or SUN-SAT | , - * / ? L |
| year (optional) | empty, 1970-2099 | , - * / |

**Note:**
- Specifying both the day-of-month and day-of-week is not supported, therefore there must be a “?” in at least one of the two fields.

The special characters used in the scheduling cron expression are:

| Character | Meaning | Example | Note |
|---|---|---|---|
| * | All possible values. | * in minutes field means “every minute”. | |
| ? | No specific value. | ? in the day-of-week field means “there is no preference on which day this occurs”. | Only allowed in the day-of-month and day-of-week fields. |
| - | Specifies range of numbers. | 10-12 in the hours field means “on the 10th, 11th, and 12th hour”. 22-2 in the hours field means “on the hour of every hour from 10 at night until 2 in the morning”. | Overflowing ranges are allowed (that is, number on left is larger than number on right) but may result in unexpected behavior. |
| , | Deliminates values. | TUE,THU in day-of-week field means “on Tuesdays and Thursdays”. | No spaces between the “,” and the values since spaces indicate separation of the fields. |

| Character | Meaning | Example | Note |
|---|---|---|---|
| / | Specifies increments of the form 'm/n', which indicates increase by n starting from m. | 0/15 in the seconds field means “at the 0th, 15th, 30th, and 45th second”. 5/15 in the seconds field means “at the 5th, 20th, 35th, and 50th second”. | */n is equivalent to 0/n Incrementing outside of the allowed range of the field is ignored (that is, 7/6 in month field is same as indicating 7). |
| L | Last day of month/week; used as nL means “last n-day of month”. | L in day-of-month field means “the last day of the month” (accounts for leap years for example Feb 28th on non-leap, Feb 29th on leap) 6L in day-of-week means “the last Friday of the month”. | Only allowed in the day-of-month and day-of-week fields L in day-of-week field indicates a Saturday. |
| W | The closest weekday (Mon-Fri) of the given date. Used as nW where n is the day of the month. | 15W means “the weekday closest to the 15th of the month”; if it falls on a Saturday, this will mean Friday the 14th; if it falls on a Sunday, this will mean Monday the 16th. | Only allowed for day-of-month field. Does not cross a boundary of the month (for example 1W and the first is a Saturday, it will indicate Monday the 3rd instead). Only works for single days, not ranges. |

Examples of cron expressions for scheduling are:

| Expression | Meaning |
|---|---|
| 0 0 0 * * ? | Daily at midnight (Every month, every day of the month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 0 1 1 ? | Yearly on the first of January at midnight (First month, first day of that month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 * * * ? | Hourly (Every month, every day of the month, every hour at 0 minutes and 0 seconds) |
| 0 0 12 ? * TUE,THU | Every Tuesday and Thursday at noon (Tuesday and Thursday of every month at 12 hours, 0 minutes and 0 seconds) |

**Note:**
The archiver may have to write data measuring multiple GigaBytes to disk. Therefore, the default scheduling is once per day. Keep this in mind if you decide to run the archiver more frequently.

## 2.6.16 set config service attribute-summarizer cluster-stat-name

This CLI command counts the number of unique subscribers that have an attribute set to a given value during each publish interval. It then logs those counts so that NDS reports can run on the summarized results.

**Note:**
While generating those NDS reports, the end date you select for the report represents the Start-of-Day for the selected date. Sandvine recommends that you set the end date to a future date or use the string "now".

```
set config service attribute-summarizer cluster-stat-name <cluster-stat-name>
```

| Attribute | Description |
|---|---|
| cluster-stat-name | Identifies the name to use for cluster and element in SPB produced statistics. |

## 2.6.17 set config service capability exchange

Configures capability exchange between the PTS/SDE and the SPB.

```
set config service capability-exchange enabled
set config service capability-exchange heartbeat-interval
```

| Parameter | Description |
|---|---|
| enabled | Enable/disable capability exchange. |
| heartbeat-interval | The interval, in seconds, at which the SPB sends heartbeat messages to the PTS/SDE to check if the connection is alive. The range is 300 to 900 seconds. |

## 2.6.18 set config service change-notification

Set whether to send change notification messages in mode pre-5.60 or 5.60 or mixed.

```
set config service change-notification ip-assignment enabled <true|false>
set config service change-notification mode <pre-5.60|5.60|mixed>
set config service change-notification session-attribute enabled <true|false>
set config service change-notification subscriber-attribute enabled <true|false>
```

| Attribute | Description |
|---|---|
| ip-assignment enabled | Enables/disables IP assignment change notifications |
| mode | There is a change notification message format change between pre-5.60 releases and 5.60. Depending on the software versions of the PTS(s) the change notifications are going out to, set to one of:<br>• 1, when all PTSs are pre-5.60<br>• 2, when all PTSs are 5.60<br>• or 1, 2, when the PTSs are mixed |
| session-attribute enabled | Enables/disables session attribute assignment change notifications |
| subscriber-attribute enabled | Enables/disables subscriber attribute assignment change notifications |

## 2.6.19 set config service control-center authentication

Configures user authentication for Control Center. The element authenticates requests that Control Center sends to make sure that the users who are logged into Control Center have the proper credentials to interact with the element.

```
set config service control-center authentication cache-time <int:0..>
set config service control-center authentication enabled <true|false>
```

| Attribute | Description | Default |
|---|---|---|
| cache-time | Configures the amount of time for which to cache the result of the local authentication. Caching the result improves performance and avoids placing a heavy load on centralized authentication servers. The value is in seconds. | 3600 secs |

| Attribute | Description | Default |
|---|---|---|
| enabled | Enables or disables local authentication. Generally, you do not need to use this command , except in cases where the element uses a multifactor authentication scheme (such as RSA SecurID) and passwords work only once or expire after a short duration. | false |

## 2.6.20 set config service control-center default-user enabled

Enables or disables the default Control Center user.

```
set config service control-center default-user enabled <true|false>
```

## 2.6.21 set config service database

Configures SPB database settings.

```
set config service database auto-vacuum enabled <true|false>
set config service database auto-vacuum freeze-max-age <int>
set config service database enabled <true|false>
set config service database ssl enabled <true|false>
set config service database ip-address <ip-address>
set config service database port <int:0..>
set config service database name <name>
set config service database username <username>
set config service database password <password>
set config service database auto-shutdown override enabled <true|false>
```

| Attributes | Description |
|---|---|
| auto-vacuum enabled | Vacuuming reclaims storage that dead tuples occupy. In general database operation, tuples (rows) that are deleted or obsoleted during an update are not physically removed from their table; they remain present until a VACUUM is done. Autovacuum vacuums periodically, especially on frequently updated tables. If this is set to **true**, the autovacuum process runs, otherwise autovacuum will not run. |
| auto-vacuum freeze-max-age | The freeze-max-age attribute is the maximum transaction ID (XID) age before a forced vacuum is done. |
| auto-shutdown override | Determines whether the database will automatically shut down at 99% disk usage. |
| enabled | When set to **true** the database service is enabled and runs. If set to **false** the database service is disabled. For example this command is set to **false** to configure an application-server-only network element, otherwise it is set to **true**. |
| ssl enabled | Determines whether the application server will only make SSL encrypted connections to the database. If set to true, you must configure the database to allow SSL connections. |
| ip-address | IP of the server hosting the database for the SPB. The default is 127.0.0.1. |
| name | Name of the database in which statistics and subscriber information are stored. The default is `sv_stat`. |
| username | User name for connections to the statistics database. The default is `svspb`. |
| password | Password for connections to the statistics database. |

| Attributes | Description |
|---|---|
| port | The port to connect to the database. The default is 5432. |

## 2.6.22 set config service db-monitor

Configures automatic database failover.

```
set config service db-monitor enabled <true|false>
set config service db-monitor vrrp-vhid <int:1..2147483647>
set config service db-monitor port <int:1024..65535>
set config service db-monitor polling-interval <int:1..900>
set config service db-monitor timeout-interval <int:3..2700>
```

| Attribute | Description |
|---|---|
| enabled | Enables or disables automatic database failover |
| polling-interval | Sets the frequency at which the database monitor polls the status of primary database |
| port | Sets the database port on which the database monitor connects to poll the status |
| timeout-interval | Sets the amount of time to wait before initiating a database failover after a failed poll attempt |
| vrrp-vhid | Sets the identified virtual host ID |

## 2.6.23 set config service ip-user-map attribute-mapping delimiter

Configures the delimiter to be used in when mapping attributes.

Valid values are any single printable character. An empty value is also permitted. The default is “, “ (comma).

## 2.6.24 set config service ip-user-map enabled

Enables IP mapping.

```
set config service ip-user-map enabled <true|false>
```

## 2.6.25 set config service ip-user-map failover

Configures failover for IP mapping.

```
set config service ip-user-map failover enabled <true|false>
set config service ip-user-map failover virtual-host-id <int:1..>
set config service ip-user-map failover script <file-path>
```

| Attribute | Description |
|---|---|
| enabled | Enables or disables IP mapping redundancy. |
| virtual-host-id | The virtual host identifier specified for the VRRP configuration of database failover. |
| script | Path to a local file. |

## 2.6.26 set config service ip-user-map realm

Configures the subscriber realm to populate subscribers into.

```
set config service ip-user-map realm <realm>
```

## 2.6.27 set config service ip-user-map dhcp boot-file attribute

Configures subscriber attribute mapping from the DHCP bootfile.

```
set config service ip-user-map dhcp boot-file attribute name <name>
set config service ip-user-map dhcp boot-file attribute regex <regex>
set config service ip-user-map dhcp boot-file attribute regex-replace <regex-replace>
set config service ip-user-map dhcp boot-file attribute expiry <time>
```

| Attribute | Description |
|---|---|
| name | The name of the attribute. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |
| expiry | The expiry is expressed as an offset from mapping time and may be defined as:<br>• Infinity<br>• A combination of n days, n hours, n minutes, n seconds<br>The default is infinity. |

## 2.6.28 set config service ip-user-map dhcp boot-file source

Sets the source of the subscriber attribute.

```
set config service ip-user-map dhcp boot-file source
<none|filename-only|filename-first|option-67-only|option-67-first>
```

| Parameter | Description |
|---|---|
| none | Turn off this feature. |
| filename-only | Use only the static BOOTP 'bootfile name' field. |
| filename-first | Try using the static BOOTP 'bootfile name' field first. If it is empty (after regex/formatting, if used), try using the DHCP option 67 field. |
| option-67-only | Use only the DHCP option 67 field. |
| option-67-first | Try using the DHCP option 67 field first. If it is empty (after regex/formatting, if used) or does not exist, try using the static BOOTP 'bootfile name' field. Note that the 'bootfile name' field will not be read if it is being used for option overloading (that is, if option 52 exists in the packet and is 1 or 3). The value may be compared against a regex and formatted, and if the value does not match the regex, or if it does but the formatted value is blank, then the attribute will not be written. |

# 2.6.29 set config service ip-user-map dhcp single-ip

Enables or disables subscriber single IP mode. Single IP mode ensures that the IP assignment unassigns all other IP assignments the subscriber may have.

```
set config service ip-user-map dhcp single-ip <true|false>
```

# 2.6.30 set config service ip-user-map dhcp subscriber-identifier

Configures how subscriber IDs are handled.

```
set config service ip-user-map dhcp subscriber-identifier mode <cpe-mac|option-82>
set config service ip-user-map dhcp subscriber-identifier ascii <true|false>
set config service ip-user-map dhcp subscriber-identifier case <unchanged|to-upper|to-lower>
set config service ip-user-map dhcp subscriber-identifier sub-option
<agent-circuit-id|agent-remote-id>
```

| Attribute | Description |
|---|---|
| mode | Determines where to find the unique identifier for subscribers in DHCP packets. |
| ascii | Determines whether to handle the subscriber UID data, as determined by mode, as an opaque binary string and represent it as hex, or to assume it is ASCII-encoded and represent it as a normal hex string. The default is hex, since the hex representation is appropriate for MAC addresses, which is most often the case. |
| case | Indicates if the DHCP username should be converted. |
| sub-option | The DHCP Option 82 sub option used to represent the subscriber ID. |

| Parameter | Description |
|---|---|
| cpe-mac | Use the CPE MAC address of a subscriber. |
| option-82 | The DHCP Option 82 suboption used to represent the subscriber ID. |
| unchanged | If ASCII, leave the username in its natural case, if MAC address, use uppercase. |
| to-upper | Convert to uppercase, using the default locale. |
| to-lower | Convert to lowercase, using the default locale. |

| Parameter | Description |
|---|---|
| agent-circuit-id | For DHCP Option 82, the Circuit ID sub-option carries information specific to which circuit the request came in on, depending on the relay agent. |
| agent-remote-id | For DHCP Option 82, the Remote ID sub-option carries information relating to the remote host end of the circuit, usually containing information that identifies the relay agent. |

# 2.6.31 set config service ip-user-map monitoring degraded-state-processing

Configures degraded state processing when monitoring IP mapping.

```
set config service ip-user-map monitoring degraded-state-processing enabled <true|false>
set config service ip-user-map monitoring degraded-state-processing process-logins-as-logouts
 <true|false>
set config service ip-user-map monitoring degraded-state-processing set-login-attributes
<true|false>
set config service ip-user-map monitoring degraded-state-processing set-logout-attributes
<true|false>
set config service ip-user-map monitoring degraded-state-processing ip-assignment-history
<true|false>
set config service ip-user-map monitoring degraded-state-processing fatal-holdoff <int:0..>
set config service ip-user-map monitoring degraded-state-processing threshold queue-size rising
 <int:0..100>
set config service ip-user-map monitoring degraded-state-processing threshold queue-size falling
 <int:0..100>
set config service ip-user-map monitoring degraded-state-processing threshold lag rising
<int:0..>
set config service ip-user-map monitoring degraded-state-processing threshold lag falling
<int:0..>
set config service ip-user-map monitoring degraded-state-processing threshold lag fatal <int:0..>
```

| Attribute | Description |
|---|---|
| enabled | Enable monitoring of the IPUserMap process for overload conditions. |
| fatal-holdoff | Hold off (pause) period after fatal state when IPUserMapper is paused momentarily. IPUserMap will not process any packets during this time. IP lookups are also disabled. |
| ip-assignment-history | Create IP assignment history in degraded state. |
| process-logins-as-logouts | Process logins as logouts in degraded state. If enabled, IPUserMap will use the login IP to logout an existing session, but will not login the new subscriber. |
| set-login-attributes | Set login attributes in degraded state. |
| set-logout-attributes | Set logout attributes in degraded state. |
| threshold queue-size rising | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 75. |
| threshold queue-size falling | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 65. |

| Attribute | Description |
|---|---|
| lag rising | IPUserMap enters the degraded state when the current processing lag time is less than this value. Default is 240. |
| lag falling | IPUserMap enters the degraded state when the current processing lag time, is less than this value. Default is 200. |
| lag fatal | IPUserMap enters the degraded state when the current processing lag time, is less than this value. Default is 300. |

## 2.6.32 set config service ip-user-map monitoring enabled

Enables monitoring of the IpUserMap process for overload conditions.

```
set config service ip-user-map monitoring enabled <true|false>
```

## 2.6.33 set config service ip-user-map radius accounting

Configures how the SPB handles RADIUS accounting.

```
set config service ip-user-map radius accounting reply <true|false>
set config service ip-user-map radius accounting sub-name delimiter <delimiter>
set config service ip-user-map radius accounting reply-before-commit <true|false>
```

| Attribute | Description |
|---|---|
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. Default is false. |
| sub-name delimiter | Configures the delimiter between multiple RADIUS attributes when building the sub-name from multiple attributes. For example:<br>`set config service ip-user-map radius accounting sub-name delimiter XYZ`<br>`set config service ip-user-map radius accounting sub-name attribute 1 regex 30`<br>`set config service ip-user-map radius accounting sub-name attribute 2 regex 31`<br>would build a subscriber name like: "`30XYZ31` Any ASCII variable, including an empty string is valid. The default is ". " |
| reply-before-commit | If configured to send accounting replies, this variable configures whether to send accounting replies immediately, or after all relevant RADIUS information has been committed. If this variable is set to true, replies will be immediate, however between the accounting reply and persisting the RADIUS information there is a window during which an SPB failure will cause a loss of information. If set to false, replies will not be sent until information is persisted. There will, however be a delay before reply, and replies will come in a burst since RADIUS information is persisted in batches. Default is false. |

# 2.6.34 set config service ip-user-map radius packet-merging

Configures RADIUS packet-merging settings.

```
set config service ip-user-map radius packet-merging enabled <true|false>
set config service ip-user-map radius packet-merging merge-key <string>

set config service ip-user-map radius packet-merging timeout <int:1..1000>
```

| Attribute | Description |
|---|---|
| enabled | Enables the RADIUS packet merging feature. This allows the attributes from two packets to be merged prior to persisting information. |
| timeout | How long to wait, in seconds, before discarding a packet that should be merged but has no matching pair. This can be increased significantly provided there is available memory. The 1000 second maximum is safe on a 32GB RAM SRP. |
| merge-key | RADIUS attributes that define the key used to match packets. |

# 2.6.35 set config service ip-user-map radius processing-mode

Configures the processing mode for RADIUS packets.

```
set config service ip-user-map radius processing-mode <all|request|response>
```

# 2.6.36 set config service ip-user-map radius session-tracking

Configures how session tracking is handled.

```
set config service ip-user-map radius session-tracking session-continue enabled <true|false>
set config service ip-user-map radius session-tracking event-timestamp enabled <true|false>
set config service ip-user-map radius session-tracking mode <normal|stateful|ignore-stops>
```

| Attribute | Description |
|---|---|
| session-continue enable | Enable monitoring of the 3GPP2-Session-Continue attribute. If set to true, accounting stop packets that have the 3GPP2-Session-Continue attribute set to 1 will not cause the subscriber's IP address to be unassigned. The default value is false. |
| event-timestamp enabled | Set to true to use the Event-Timestamp RADIUS attribute for the event time of IP and attribute mappings, when present. |
| mode | Controls how RADIUS accounting START and STOP messages are handled. The options are:<br>• normal: a START message logs the subscriber in (or keeps them logged in and updates their IP/attributes information) and a STOP logs them out.<br>• stateful: a START is treated the same way as in normal mode, and a STOP only logs a subscriber out if it is from the same NAS and part of the same session as the last START message that came in for that subscriber; otherwise, it is ignored (that is, state is kept on the NAS-IP-Address and Acct-Session-Id attributes of each subscriber).<br>• ignore-stops: a START is treated the same way as in NORMAL mode, and STOP messages are completely ignored. |

## 2.6.37 set config service ip-user-map radius single-ip

Enables or disables subscriber single IP mode.

```
set config service ip-user-map radius single-ip <false|true>
```

Enables subscriber single IP mode, ensuring that the IP assignment unassigns all other IP assignments the subscriber may have. True enables single IP mode and false allows multiple IP assignments to subscribers.

## 2.6.38 set config service ip-user-map radius subnet-mask

Assign a block of IPs on accounting start requests.

```
set config service ip-user-map radius subnet-mask enabled <true|false>
```

```
set config service ip-user-map radius subnet-mask limit <int:1..30>
```

| Attribute | Description |
|---|---|
| enabled | If subnet mask is enabled (true), then on accounting start requests a group of IP addresses are assigned to a particular subscriber and on accounting stop requests they are unassigned. If false, the IP Mapper assigns and unassigns a single IP address to the subscriber. |
| limit | Limits the number of IP addresses that can be assigned to a particular subscriber. For example, if the subnet bit mask limit is 8, then 256 IP addresses can be assigned to the subscriber. Default is 16. |

## 2.6.39 set config service ip-user-map radius subscriber

Configures how subscribers are handled.

```
set config service ip-user-map radius subscriber create-on-auth-request <true|false>
```

```
set config service ip-user-map radius subscriber id-case-conversion <to-lower|to-upper|unchanged>
```

| Attribute | Description |
|---|---|
| create-on-auth-request | Access-Request creates the subscribers in the system for the purpose of attribute mapping. |
| id-case-conversion | Determines if the case of the unique string identifying the subscriber is all uppercase, lowercase or should be unchanged. In the case of a MAC address, the unchanged setting results in upper case. The default is unchanged. |

## 2.6.40 set config service ip-user-map <service> capture-mode

Set the format in which packets are forwarded to the SPB. This command is only relevant for deployments using PTS sniffing.

```
set config service ip-user-map dhcp capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

```
set config service ip-user-map radius capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

| Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

## 2.6.41 set config service ip-user-map <service> enabled

Enables or disables the specified service.

```
set config service ip-user-map dhcp enabled <true|false>
set config service ip-user-map radius enabled <true|false>
```

## 2.6.42 set config service ip-user-map <service> parser instances

Configures the number of internal parser instances allocated to parsing DHCP or RADIUS packets.

```
set config service ip-user-map dhcp parser instances <int:1..10>
set config service ip-user-map radius parser instances <int:1..10>
```

## 2.6.43 set config service load-balancer

```
set config service load-balancer enable <boolean>
set config service load-balancer http load-balancer-port <integer>
set config service load-balancer http port <integer>
set config service load-balancer http sticky <boolean>
set config service load-balancer web-services load-balancer-port <integer>
set config service load-balancer web-services port <integer>
set config service load-balancer web-services sticky <boolean>
set config service load-balancer web-services-security load-balancer-port <integer>
set config service load-balancer web-services-security port <integer>
set config service load-balancer web-services-security sticky <boolean>
```

| Attributes | Description |
|---|---|
| enable | Enables or disables load balancing on the SPB. |
| http load-balancer-port | Identifies the load balancer port for HTTP client connections. |
| http port | Identifies the HTTP port. |
| http sticky | Enables or disables the direction of all HTTP requests from a client to one SPB. |
| web-services load-balancer-port | Identifies the load balancer port for web-service client connections. |

| Attributes | Description |
|---|---|
| web-services port | Identifies the web-services port. |
| web-services sticky | Enables or disables the direction of all web-service requests from a client to one SPB. |
| web-services-security load-balancer-port | Identifies the load balancer port for web-service client connections over SSL. |
| web-services-security port | Identifies the SSL port. |
| web-services-security sticky | Enables or disables the direction of all web-services requests over SSL from a client to one SPB. |

| Parameter | Description |
|---|---|
| boolean | True or false. |
| integer | An integer between 0 and 65535 (inclusive), used to specify a port. |

## 2.6.44 set config service message-broker

Configures how SPB communicates with other network elements, the connections allowed by the message broker, and the maximum message size.

```
set config service message-broker enabled <true|false>
set config service message-broker max-connections <int:300..>
set config service message-broker max-msg-size <int:0..>
```

You need to restart the message broker to commit these changes.

| Attribute | Description |
|---|---|
| enabled | Determines whether the message broker will start on boot-up. |
| max-connections | Specifies the maximum number of active client connections allowed by the message broker. |
| max-msg-size | Specifies the maximum message size allowed by the message broker. |

## 2.6.45 set config service nat

Enables or disables NAT mappings and their history, and configures the database sizing for storing NAT mappings.

```
set config service nat enabled <true|false>
set config service nat history enabled <true|false>
set config service nat mappings max <int:0..>
set config service nat buffers max-nat-mappings <int:0..100>
```

| Attribute | Function |
|---|---|
| enabled | Enables or disables the in-memory NAT database. When NAT is disabled, creating or deleting NAT mappings results in errors. |
| history enabled | Enables or disables auditing of NAT mappings. |

| Attribute | Function |
|---|---|
| mappings max | Sets the maximum number of NAT mappings that can be stored in the in-memory NAT database. |
| buffers max-nat-mappings | Sets the percent buffer beyond the maximum number of NAT mappings that can be stored in the in-memory NAT database. |

# 2.6.46 set config service spb

Enables or disables spb-services on the SPB and configures the SPB servers for discovery in Control Center.

```
set config service spb enabled <false|true>
```

```
set config service spb servers <servers>
```

| Attributes | Description |
|---|---|
| enabled | Specifies whether spb-services comes online when the application server starts. |
| servers | A space separated list of URIs for SPB servers. If the list contains more than one item, it must be in a quoted string. It accepts host names or IP addresses in the simplest case (for example, 10.1.1.23), or URIs (for example, ssl://spb.example.com:50000).<br>**Note:**<br>Execute this command on a database-only SRP. |

# 2.6.47 set config service stats-collection auto-deactivate

Configures the auto-deactivation status and interval-multiplier-factor statistics collection variables.

```
set config service stats-collection auto-deactivate enabled <true|false>
```

```
set config service stats-collection auto-deactivate interval-multiplier-factor
<interval-multiplier-factor-value>
```

| Attribute | Description |
|---|---|
| enabled | If true, the SPB identifies network elements that stop publishing statistics and deactivates them automatically. |
| interval-multiplier-factor | A factor that is multiplied with the statistical definition interval to calculate the deactivation threshold. |

# 2.6.48 set config service stats-collection statistics-definitions

## 2.6.48.1 set config service stats-collection statistics-definitions dns

```
set config service stats-collection statistics-definitions dns domain-volume <integer>
set config service stats-collection statistics-definitions dns response-management <integer>
set config service stats-collection statistics-definitions dns server-mttr-distribution <integer>
```

```
set config service stats-collection statistics-definitions dns server-quality <integer>
set config service stats-collection statistics-definitions dns subscriber-volume <integer>
```

| Attribute | Description |
|---|---|
| domain-volume | Sets the DNS domain name statistics publish interval. |
| response-management | Sets the response management statistics publish interval. |
| server-mttr-distribution | Sets the server MTTR distribution statistics publish interval. |
| server-quality | Sets server quality statistics publish interval. |
| subscriber-volume | Sets subscriber volume statistics publish interval. |

| Parameter | Description |
|---|---|
| integer | Specifies the network element publishing interval (granularity of the statistics), in seconds. |

## 2.6.48.2 set config service stats-collection statistics-definitions inter-network application-protocol

```
set config service stats-collection statistics-definitions inter-network application-protocol
 <integer>
```

## 2.6.48.3 set config service stats-collection statistics-definitions network

```
set config service stats-collection statistics-definitions network application-protocol <integer>
set config service stats-collection statistics-definitions network malware <integer>
set config service stats-collection statistics-definitions network malware-dropped-packets
<integer>
set config service stats-collection statistics-definitions network traffic <integer>
```

| Attribute | Description |
|---|---|
| application-protocol | Publishes the application protocol statistics at the time interval specified. |
| malware | Publishes malware statistics at the time interval specified. |
| malware-dropped-packets | Publishes the malware dropped packet statistics at the time interval specified. |
| traffic | Publishes network traffic statistics at the time interval specified. |

| Parameter | Description |
|---|---|
| integer | Specifies the network element publishing interval (granularity of the statistics), in seconds. |

## 2.6.48.4 set config service stats-collection statistics-definitions network-element

```
set config service stats-collection statistics-definitions network-element classifier
application-protocol <integer>
set config service stats-collection statistics-definitions network-element classifier basic
<integer>
set config service stats-collection statistics-definitions network-element network-interface
<integer>
set config service stats-collection statistics-definitions network-element
network-interface-application-protocol <integer>
set config service stats-collection statistics-definitions network-element performance <integer>
set config service stats-collection statistics-definitions network-element policy-histogram
application-protocol <integer>
set config service stats-collection statistics-definitions network-element policy-histogram
basic <integer>
```

```
set config service stats-collection statistics-definitions network-element published-expression
 <integer>
```

| Attribute | Description |
|---|---|
| classifier application-protocol | Publishes classifier application-protocol statistics at the specified time interval. |
| classifier basic | Publishes classifier basic statistics at the specified time interval. |
| network-interface | Publishes network interface statistics at the specified time interval. |
| network-interface-application-protocol | Publishes network interface application-protocol statistics at the specified time interval. |
| performance | Publishes network element performance statistics at the specified time interval. |
| policy-histogram application-protocol | Publishes policy histogram application protocol statistics at the specified time interval. |
| policy-histogram basic | Publishes policy histogram basic statistics at the specified time interval. |
| published-expression | Publishes published expression statistics at the specified time interval. |

| Parameter | Description |
|---|---|
| integer | Specifies the network element publishing interval (granularity of the statistics), in seconds. |

## 2.6.48.5 set config service stats-collection statistics-definitions network-quality

```
set config service stats-collection statistics-definitions network-quality
flow-bandwidth-distribution <integer>
set config service stats-collection statistics-definitions network-quality
flow-efficiency-distribution <integer>
set config service stats-collection statistics-definitions network-quality
userbandwidth-distribution <integer>
```

| Attribute | Description |
|---|---|
| flow-bandwidth-distribution | Publishes the flow bandwidth distribution statistics at the time interval specified. |
| flow-efficiency-distribution | Publishes flow efficiency distribution statistics at the time interval specified. |
| user-bandwidth-distribution | Publishes user bandwidth distribution statistics at the time interval specified. |

| Parameter | Description |
|---|---|
| integer | Specifies the network element publishing interval (granularity of the statistics), in seconds. |

## 2.6.48.6 set config service stats-collection statistics-definitions subscriber

```
set config service stats-collection statistics-definitions subscriber application-protocol
<integer>
set config service stats-collection statistics-definitions subscriber application-protocol-basic
 <integer>
```

| Attribute | Description |
|---|---|
| application-protocol | Publishes application protocol statistics at the time interval specified. |
| application-protocol-basic | Publishes basic application protocol statistics at the time interval specified. |

| Parameter | Description |
|---|---|
| integer | Specifies the network element publishing interval (granularity of the statistics), in seconds. |

### 2.6.48.7 set config service stats-collection statistics-definitions voip application-protocol-voip-provider

```
set config service stats-collection statistics-definitions voip
application-protocol-voip-provider <integer>
```

## 2.6.49 set config service stats-recovery-threshold

This specifies the time to wait for statistics, in seconds, before expiry.

## 2.6.50 set config service subscriber-management audit

Configures subscriber management auditing settings.

```
set config service subscriber-management audit transitions ip-assignment enabled <true|false>
set config service subscriber-management audit transitions subscriber-attribute enabled
<true|false>
set config service subscriber-management audit transitions session-attribute enabled <true|false>
set config service subscriber-management audit records session-attributes enabled <true|false>
set config service subscriber-management audit records ip-assignment-history enabled <true|false>
```

| Attributes | Description |
|---|---|
| transitions ip-assignment enabled | If enabled, change notifications and the IP history are created for all IP changes, including multiple transitions within a single batch of processing. |
| transitions subscriber-attribute enabled <boolean> | If enabled, change notifications and attribute audit records are created for all subscriber attribute changes, including multiple transitions with a single batch of processing. |
| session-attribute enabled | If enabled, session attribute audit records are logged to the database, available either through direct SQL or via Reporting Services.<br>**Note:** Enabling this option decreases the maximum rate of dynamic IP mappings (including RADIUS and DHCP IP mapping) and requires careful consideration of data retention and disk-write performance.<br>The retention period of the session_attr_audit table determines how long the session audit history is kept in the database. Decrease this period for high session rates. |
| ip-assignment-history enabled | If enabled, IP assignment history is logged to the database. |

# 2.6.51 set config service subscriber-management cache attributes

Configures database sizing and tuning for subscriber attribute data.

```
set config service subscriber-management cache attributes max <int:0..>
set config service subscriber-management cache attributes max-length <int:0..>
set config service subscriber-management cache attributes major-memory-blocks <int:0..>
set config service subscriber-management cache attributes minor-length <int:0..>
set config service subscriber-management cache attributes major-length <int:0..>
```

| Attribute | Description |
|---|---|
| max | Maximum total number of attributes that can be stored in memory. |
| max-length | Maximum attribute value size in bytes that the system will accept. |
| major-memory-blocks | The number of major memory blocks (of size major-length) available. Major blocks are only used when an attribute's value exceeds minor-length. |
| minor-length | An attribute value with length in bytes <= to this value will be stored in a single minor attribute memory block. Default is 20. |
| major-length | An attribute value with length in bytes that is greater than minor-length and less than or equal to max-length is stored in one or more chained major blocks of length equal to this value. For example, if major-length=512, and the length of an attribute value is 600 bytes, it will be stored in two 512 byte blocks, "wasting" 424 bytes in one of the major blocks. Default is 128. |

# 2.6.52 set config service subscriber-management cache subscribers

Configures database sizing and tuning for subscriber data.

```
set config service subscriber-management cache subscribers max <int:0..>
set config service subscriber-management cache subscribers max-name-length <int:1..255>
set config service subscriber-management cache subscribers avg-name-length <int:1..255>
set config service subscriber-management cache subscribers ip-assignments max <int:0..>
set config service subscriber-management cache subscribers ip-assignments buffers max-subscribers
 <int:0..100>
set config service subscriber-management cache subscribers ip-assignments buffers
max-ip-assignments <int:0..100>
set config service subscriber-management cache subscribers ip-assignments buffers max-attributes
 <int:0..100>
```

| Attribute | Description |
|---|---|
| max | The maximum number of subscriber records that can be in memory |
| max-name-length | The maximum length for a subscriber name |
| avg-name-length | The average length for a subscriber name |
| ip-assignments max | The maximum number of IP assignment record that can be in memory |
| ip-assignments buffers max-subscribers | The percentage of buffer space to allocate to subscribers. |

| Attribute | Description |
|---|---|
| ip-assignments buffers max-ip-assignments | The percentage of buffer space to allocate to IP assignments |
| ip-assignments buffers max-attributes | The percentage of buffer space to allocate to subscriber attributes. |

## 2.6.53 set config service subscriber-management snapshot alarm-tolerance

Sets the allowable number of seconds between successful snapshot attempts before Alarm Model 2312: SPB In-Memory Database Snapshot Failure fires. Default is 4 hours.

```
set config service subscriber-management snapshot alarm-tolerance <int:30..>
```

## 2.6.54 set config service subscriber-provisioning alarms lag

Configures lag alarm settings.

```
set config service subscriber-provisioning alarms lag falling <int>
set config service subscriber-provisioning alarms lag rising <int>
```

| Attributes | Description |
|---|---|
| falling | Falling threshold of the provisioning lag alarm in seconds. The default is 240 seconds. |
| rising | Rising threshold of the provisioning lag alarm in seconds. The default is 200 seconds. |

## 2.6.55 set config service subscriber-provisioning alarms overload

Configures alarm overload settings.

```
set config service subscriber-provisioning alarms overload request-falling <int>
set config service subscriber-provisioning alarms overload request-rising <int>
set config service subscriber-provisioning alarms overload response-falling <int>
set config service subscriber-provisioning alarms overload response-rising <int>
```

| Attributes | Description |
|---|---|
| request-falling | Falling threshold of the provisioning overload alarm for request queue size. |
| request-rising | Rising threshold of the provisioning overload alarm for request queue size. |
| response-falling | Falling threshold of the provisioning overload alarm for response queue size. |
| response-rising | Rising threshold of the provisioning overload alarm for response queue size. |

## 2.6.56 set config service subscriber-provisioning cache-miss notifications enabled

Enables or disables PTS IP lookup failure notifications to the SDE.

```
set config service subscriber-provisioning cache-miss notifications enabled <true|false>
```

## 2.6.57 set config service subscriber-provisioning queues batch max-size

Sets the maximum number of provisioning messages that a particular batch request worker enqueues for processing.

```
set config service subscriber-provisioning queues batch max-size <int>
```

## 2.6.58 set config service subscriber-provisioning queues request max-size

Sets the maximum number of provisioning messages that are received and enqueued for processing.

```
set config service subscriber-provisioning queues request max-size <int>
```

## 2.6.59 set config service subscriber-provisioning queues response max-size

Sets the maximum number of provisioning messages that are completed and enqueued for reply.

```
set config service subscriber-provisioning queues response max-size <int>
```

## 2.6.60 set config service subscriber-provisioning workers batch

Configures batch worker settings.

```
set config service subscriber-provisioning workers batch batch-size <int>
set config service subscriber-provisioning workers batch max-lag <int>
set config service subscriber-provisioning workers batch number <int>
set config service subscriber-provisioning workers batch priority <int>
set config service subscriber-provisioning workers batch timeout <int>
```

| Attributes | Description |
|---|---|
| batch-size | The number of individual requests that constitute a full batch. |
| max-lag | The threshold time in milliseconds beyond which message processing is considered to be lagging. |
| number | The number of batch request worker threads processing queues of parsed provisioning message batches from the SDE. |

| Attributes | Description |
|---|---|
| priority | The priority of the batch request worker threads processing queues of parsed provisioning message batches from the SDE. |
| timeout | The maximum time in milliseconds that a batch request worker should wait for a full batch before processing a partial batch. |

## 2.6.61 set config service subscriber-provisioning workers request

Configures request worker settings.

```
set config service subscriber-provisioning workers request number <int>
set config service subscriber-provisioning workers request priority <int>
```

| Attributes | Description |
|---|---|
| number | The number of request worker threads receiving provisioning messages from the SDE. |
| priority | The priority of the request worker threads receiving provisioning messages from the SDE. |

## 2.6.62 set config service subscriber-provisioning workers response

Configures response worker settings.

```
set config service subscriber-provisioning workers response number <int>
set config service subscriber-provisioning workers response priority <int>
```

| Attributes | Description |
|---|---|
| number | The number of provisioning response worker threads sending replies to the SDE upon completion of provisioning processing. |
| priority | The priority of the provisioning response worker threads sending replies to the SDE upon completion of provisioning processing. |

## 2.6.63 set config service top-talker

Identifies and quantifies subscribers who use the most bandwidth.

```
set config service top-talker enabled <true|false>
set config service top-talker policy-file <policy-file>
set config service top-talker schedule <schedule>
set config service top-talker transaction timeout <int:0..>
```

| Attributes | Description |
|---|---|
| enabled | Enables or disables Top Talkers. |

| Attributes | Description |
|---|---|
| policy-file | Path to the SandScript policy file to use. Path can point to a centralized policy.conf file location on an FTP or HTTP/HTTPS server. The policy.conf file contains SandScript rules and actions. |
| transaction timeout | The transaction timeout in minutes for a single execution of the Top Talker search. Default is 60. |
| schedule | Determines when the Top Talkers daemon will wake up and evaluate the rules that are loaded. See the example given below for more information on schedule. |

**Scheduling**

Scheduling is set in an expression similar to Unix. The cron expression comprises these required and optional fields, separated by whitespace:

| Field meaning | Allowed values | Allowed special characters |
|---|---|---|
| seconds | 0-59 | , - * / |
| minutes | 0-59 | , - * / |
| hours | 0-23 | , - * / |
| day-of-month | 1-31 | , - * / ? L W |
| month | 1-12 or JAN-DEC | , - * / |
| day-of-week | 1-7 or SUN-SAT | , - * / ? L |
| year (optional) | empty, 1970-2099 | , - * / |

**Note:**
Specifying both the day-of-month and day-of-week is not supported, therefore there must be a “?” in at least one of the two fields.

The special characters used in the scheduling cron expression are:

| Character | Meaning | Example | Note |
|---|---|---|---|
| * | All possible values. | * in minutes field means “every minute”. | |
| ? | No specific value. | ? in the day-of-week field means “there is no preference on which day this occurs”. | Only allowed in the day-of-month and day-of-week fields. |
| - | Specifies range of numbers. | 10-12 in the hours field means “on the 10th, 11th, and 12th hour”. 22-2 in the hours field means “on the hour of every hour from 10 at night until 2 in the morning”. | Overflowing ranges are allowed (that is, number on left is larger than number on right) but may result in unexpected behavior. |
| , | Deliminates values. | TUE,THU in day-of-week field means “on Tuesdays and Thursdays”. | No spaces between the “,” and the values since spaces indicate separation of the fields. |
| / | Specifies increments of the form 'm/n', which indicates increase by n starting from m. | 0/15 in the seconds field means “at the 0th, 15th, 30th, and 45th second”. 5/15 in the seconds field means “at the 5th, 20th, 35th, and 50th second”. | */n is equivalent to 0/n Incrementing outside of the allowed range of the field is ignored (that is, 7/6 in month field is same as indicating 7). |

| Character | Meaning | Example | Note |
|---|---|---|---|
| L | Last day of month/week; used as nL means “last n-day of month”. | L in day-of-month field means “the last day of the month” (accounts for leap years for example Feb 28th on non-leap, Feb 29th on leap) 6L in day-of-week means “the last Friday of the month”. | Only allowed in the day-of-month and day-of-week fields L in day-of-week field indicates a Saturday. |
| W | The closest weekday (Mon-Fri) of the given date. Used as nW where n is the day of the month. | 15W means “the weekday closest to the 15th of the month”; if it falls on a Saturday, this will mean Friday the 14th; if it falls on a Sunday, this will mean Monday the 16th. | Only allowed for day-of-month field. Does not cross a boundary of the month (for example 1W and the first is a Saturday, it will indicate Monday the 3rd instead). Only works for single days, not ranges. |

Examples of cron expressions for scheduling are:

| Expression | Meaning |
|---|---|
| 0 0 0 * * ? | Daily at midnight (Every month, every day of the month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 0 1 1 ? | Yearly on the first of January at midnight (First month, first day of that month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 * * * ? | Hourly (Every month, every day of the month, every hour at 0 minutes and 0 seconds) |
| 0 0 12 ? * TUE,THU | Every Tuesday and Thursday at noon (Tuesday and Thursday of every month at 12 hours, 0 minutes and 0 seconds) |

**Note:**
The archiver may have to write data measuring multiple GigaBytes to disk. Therefore, the default scheduling is once per day. Keep this in mind if you decide to run the archiver more frequently.

## 2.6.64 set config service truncollator enabled

Use this command to identify data that is no longer needed, in the oldest partitions. It truncates those partitions and then re-allocates them to the time interval immediately after the future most partition.

# 2.6.65 set config service warm-standby

Configures the warm standby feature.

```
set config service warm-standby server <ip-address>
set config service warm-standby archive email <email-address>
set config service warm-standby archive frequency <int:0..10080>
set config service warm-standby archive log <log>
set config service warm-standby archive threshold warning <int:0..90>
set config service warm-standby archive threshold stop <int:0..90>
set config service warm-standby restore email <email-address>
set config service warm-standby restore frequency <int:0..10080>
```

| Attribute | Description |
|---|---|
| server | The IP address of the standby server. |
| archive email | The email address to which warning emails will be sent in the event that database log files cannot be successfully archived and disk usage exceeds the warning threshold. |
| archive frequency | The frequency with which warning emails are sent in the case that database archival continues to fail and disk usage continues to exceed the value set using `set config service warm-standby archive threshold` CLI configuration command. This value is expressed in minutes and the default is 5. |
| archive log | The directory on the standby server to which database log files are archived. This is specified as a subdirectory of the pgsql database user home directory, typically /usr/local/pgsql.<br>**Note:** Set this variable on both the primary and standby servers, when a non-default directory is chosen as the archive location. |
| archive threshold warning | The transaction log disk capacity beyond which warning emails are sent if a log file cannot be archived. This value is expressed as a percentage and is typically slightly higher than the expected steady state usage of the transaction log disk. The default is 25. |
| archive threshold stop | Indicates the transaction log disk capacity beyond which database archival is disabled altogether. This measure is needed to prevent the primary database server from running out of disk space and enforcing a mandatory shutdown. This value is expressed as a percentage and should typically be near full disk capacity. The default is 90. |
| restore email | The email address to send warning emails to in the event that database log files are not successfully restored on the standby server. |
| restore frequency | Assuming database archival is functioning properly, the length of time that the database restore process waits for a database log file before sending a warning email. This is also the frequency with which subsequent warning emails are sent in the event that the database restore process continues to wait. This value is expressed in minutes and the default is 5. |

# 2.6.66 set config subscriber

Configures deletion options of inactive subscribers.

```
set config subscriber mark-inactive enabled <true|false>
set config subscriber remove-inactive enabled <true|false>
set config subscriber remove-inactive retention-threshold <int:0..>
set config subscriber remove-inactive schedule <schedule>
```

| Attribute | Description |
|---|---|
| mark-inactive enabled | Marks the deleted subscribers as inactive and retains the subscriber name. The default is set to false. |
| remove-inactive enabled | Enables or disables the automatic deletion of inactive subscribers after the retention threshold. The default is set to false. |
| remove-inactive retention-threshold | The retention period of inactive subscribers in days. The default is 180 days. |
| remove-inactive schedule | The schedule for deleting inactive subscribers. By default, it runs everyday midnight. |

**Scheduling**

Scheduling is set in an expression similar to Unix. The cron expression comprises these required and optional fields, separated by whitespace:

| Field meaning | Allowed values | Allowed special characters |
|---|---|---|
| seconds | 0-59 | , - * / |
| minutes | 0-59 | , - * / |
| hours | 0-23 | , - * / |
| day-of-month | 1-31 | , - * / ? L W |
| month | 1-12 or JAN-DEC | , - * / |
| day-of-week | 1-7 or SUN-SAT | , - * / ? L |
| year (optional) | empty, 1970-2099 | , - * / |

**Note:**
- Specifying both the day-of-month and day-of-week is not supported, therefore there must be a “?” in at least one of the two fields.

The special characters used in the scheduling cron expression are:

| Character | Meaning | Example | Note |
|---|---|---|---|
| * | All possible values. | * in minutes field means “every minute”. | |

| Character | Meaning | Example | Note |
|---|---|---|---|
| ? | No specific value. | ? in the day-of-week field means “there is no preference on which day this occurs”. | Only allowed in the day-of-month and day-of-week fields. |
| - | Specifies range of numbers. | 10-12 in the hours field means “on the 10th, 11th, and 12th hour”. 22-2 in the hours field means “on the hour of every hour from 10 at night until 2 in the morning”. | Overflowing ranges are allowed (that is, number on left is larger than number on right) but may result in unexpected behavior. |
| , | Deliminates values. | TUE,THU in day-of-week field means “on Tuesdays and Thursdays”. | No spaces between the “,” and the values since spaces indicate separation of the fields. |
| / | Specifies increments of the form 'm/n', which indicates increase by n starting from m. | 0/15 in the seconds field means “at the 0th, 15th, 30th, and 45th second”. 5/15 in the seconds field means “at the 5th, 20th, 35th, and 50th second”. | */n is equivalent to 0/n Incrementing outside of the allowed range of the field is ignored (that is, 7/6 in month field is same as indicating 7). |
| L | Last day of month/week; used as nL means “last n-day of month”. | L in day-of-month field means “the last day of the month” (accounts for leap years for example Feb 28th on non-leap, Feb 29th on leap) 6L in day-of-week means “the last Friday of the month”. | Only allowed in the day-of-month and day-of-week fields L in day-of-week field indicates a Saturday. |
| W | The closest weekday (Mon-Fri) of the given date. Used as nW where n is the day of the month. | 15W means “the weekday closest to the 15th of the month”; if it falls on a Saturday, this will mean Friday the 14th; if it falls on a Sunday, this will mean Monday the 16th. | Only allowed for day-of-month field. Does not cross a boundary of the month (for example 1W and the first is a Saturday, it will indicate Monday the 3rd instead). Only works for single days, not ranges. |

Examples of cron expressions for scheduling are:

| Expression | Meaning |
|---|---|
| 0 0 0 * * ? | Daily at midnight (Every month, every day of the month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 0 1 1 ? | Yearly on the first of January at midnight (First month, first day of that month, at 0 hours, 0 minutes and 0 seconds) |
| 0 0 * * * ? | Hourly (Every month, every day of the month, every hour at 0 minutes and 0 seconds) |
| 0 0 12 ? * TUE,THU | Every Tuesday and Thursday at noon (Tuesday and Thursday of every month at 12 hours, 0 minutes and 0 seconds) |

**Note:**
The archiver may have to write data measuring multiple GigaBytes to disk. Therefore, the default scheduling is once per day. Keep this in mind if you decide to run the archiver more frequently.

# 2.6.67 set config support notification-email-address

Configures the list of email addresses that receive support notifications in case of a module or service failure. There is no limit to the number of email addresses that you can add to this comma delimited list. Run this command again to modify the list.

```
set config support notification-email-address <email-addresses>
```

# 2.6.68 set config system accounting

This command is used to configure accounting on SPB.

```
set config system accounting queue-size <int:1..1000>
set config system accounting batch-size <int:1..1000>
set config system accounting send-interval <int:1..1000>
set config system accounting error-interval <int:1000..10000>
set config system accounting tacacs+
```

| Attribute | Description |
|---|---|
| queue-size | The maximum number of accounting records that can be queued. |
| batch-size | The number of records that are sent at a time. |
| send-interval | The time, in millseconds, between sending batches of records. |
| error-interval | The delay, in millseconds, before retrying after an error. |
| tacacs+ | Remote accounting configuration using TACACS+.<br>For more information, see *set config system accounting tacacs+* . |

# 2.6.69 set config system accounting tacacs+

This command is used to configure TACACS+ accounting on the SPB.

```
set config system accounting tacacs+ enabled <true|false>
set config system accounting tacacs+ servers "<server-pair>"
set config system accounting tacacs+ secret <string>
set config system accounting tacacs+ timeout <int:1..30>
set config system accounting tacacs+ login <mandatory|best-effort>
set config system accounting tacacs+ debug true|false
```

| Attribute | Description |
|---|---|
| server-pair | A space-separated list of one or two servers. |
| enabled | Accounting enabled or disabled. |
| secret | The secret key shared with the TACACS+ server. |
| timeout | The timeout in seconds for communicating with the TACACS+ server(s). The range is 1 through 30 seconds. Default value is 3 seconds. |
| login | Controls whether or not a login is denied if the accounting record cannot be logged. |

| Attribute | Description |
|---|---|
| debug | Debugging enabled or disabled. |

# 2.6.70 set config system authentication

This command is used to set remote authentication using RADIUS and TACAS+.

```
set config system authentication radius secret <secret>
set config system authentication radius servers <servers>
set config system authentication tacacs+
```

Committing this change requires restarting the authentication service.

| Attribute | Description |
|---|---|
| secret | The secret shared with the RADIUS. |
| servers | A space separated list of RADIUS authentication servers. If the list contains more than one item, it must be in a quoted string. It accepts host names or IP addresses in the simplest case (for example, 10.1.1.23), or URIs (for example, ssl://spb.example.com:50000). |
| tacacs+ | Configures TACACS+ authentication. For more information, see *set config system authentication tacacs+*. |

# 2.6.71 set config system authentication tacacs+

This command is used to configure TACACS+ authentication on the SPB.

```
set config system authentication tacacs+ servers "<server-pair>"
set config system authentication tacacs+ enabled <true|false>
set config system authentication tacacs+ secret <string>
set config system authentication tacacs+ timeout <int:1..30>
set config system authentication tacacs+ debug <true|false>
set config system authentication tacacs+ service <string>
set config system authentication tacacs+ default-group <admin|operator|service>
set config system authentication tacacs+ default-shell <bash|cli>
```

| Attribute | Description |
|---|---|
| server-pair | A space-separated list of one or two servers. |
| enabled | Authentication enabled or disabled. |
| secret | The secret key shared with the TACACS+ server. |
| timeout | The timeout in seconds for communicating with the TACACS+ server(s). The range is 1 through 30 seconds. Default value is 3 seconds. |
| debug | Debugging enabled or disabled. |
| service | The name of the service used to authorize users. |
| default-group | The default privilege level for remote users. |
| default-shell | Default login shell. |

## 2.6.72 set config system services last-reload

Configures if a given reload failure will generate an alarm. See the `show service last-reload` CLI command.

```
set config system services last-reload <index> enabled <true|false>
```

# 2.7 set

Interface set commands allow you to change the configuration of an interface dynamically.

## 2.7.1 set network-element

Sets network element functions.

```
set network-element cluster <network-element-cluster-name> element <network-element-name>
activate
```

```
set network-element cluster <network-element-cluster-name> element <network-element-name>
deactivate
```

```
set network-element cluster <network-element-cluster-name> element <network-element-name>
statistic-definition <statistics-definition>
```

```
set network-element cluster <network-element-cluster-name> element <network-element-name>
statistic-definition <statistics-definition> complete-interval end-time <yyyy-mm-dd>
```

| Attribute | Function |
|---|---|
| cluster | Filter a network element through the specified clusters |
| element | Filter a network element through the specified cluster elements |
| activate | Activate a network element |
| deactivate | Deactivate a network element |
| statistic-definition | Filter through statistic definition. |
| complete-interval end-time | Endtime at or before statistics are marked as complete. End date should be in this format yyyy-MM-ddThh:mm:ss, for example: 2011-12-09T01:45:00 |

## 2.7.2 set network-element cluster

Configures a network element cluster.

```
set network-element-cluster cluster <cluster> element <element> activate
```

```
set network-element-cluster cluster <cluster> element <element> deactivate
```

```
set network-element-cluster cluster <cluster> element <element> statistic-definition
(<statistic-definition-name>|*) complete-interval end-time <end-time>
```

| Attribute | Description |
|---|---|
| cluster | The name of the cluster |

| Attribute | Description |
|---|---|
| element | The name of the element |
| statistic-definition | The name of a statistic definition or * for all. |
| end-time | The end time for interval to complete |

## 2.7.3 set service control-center database back-up

```
set service control-center database back-up <filename>
```

## 2.7.4 set service control-center database restore

```
set service control-center database restore <filename>
```

## 2.7.5 set service database backup

This command backs up the SPB database into a file that you specify. As part of ongoing disaster recovery support, you should back up your database. A backup is best suited for recovering statistics data, because IP mapping or subscriber attribute data often changes too frequently to be useful when restored.

```
set service database backup
```

**Note:**
You can safely run a backup at any time without interrupting the running database. However, since a large database may take some time to save its contents to a file, schedule the backup for a period during which the database is not used heavily for generating reports.

## 2.7.6 set service database password

Reset the service database password for a specific user (for example, svadmin).

Upon execution this appears in the CLI shell:

```
Database user: svadmin
Current password
New password:
Confirm new password:
```

The services configured appear once the database password is set:

```
Service
------------------
Default Services
Database
Application Server
Detected the following database authentication configuration:
Type  Database User CIDR-Address       Method
----- -------- ---- ------------------ ------
local all      all                     trust
host  all      all  127.0.0.1/32       trust
```

```
host  all      all  ::1/128            trust
local sv_stat  all                     trust
host  all      all  10.0.0.0 255.0.0.0 trust
host  all      all  40.0.0.0 255.0.0.0 trust
host  all      all  0.0.0.0 0.0.0.0    trust
Please ensure that these settings are correct. Consult the SPB Administration Guide for further
 information.
```

## 2.7.7 set service database restore

This command restores the SPB database from its backup file. Restoring drops the table, recreates the table, and repopulates all of the statistics data once again.

```
set service database restore
```

This command lists available backup file names. Select the appropriate file from that list, to restore the required database. This is typical output resulting from this command:

```
set service database restore

svdata_20130816T161223.db|         List of available backup files by name from where
                                   database can be restored
svdata_20130816T161931.db
```

Rerun the command, selecting the appropriate file from that list, to restore the required database. For example:

```
SPC> set service database restore svdata_20130816T161931.db

You are about to restore the SPB database. Before you proceed make sure that the application
server and message broker service are stopped. Also, ensure that the autovacuum is disabled
using 'set config service database auto-vacuum
enabled false'. Continue? (y/n): y

Database restore successful.
```

## 2.7.8 set service database retention table

Configures retention periods for partitioned database tables.

```
set service database retention table <tableName> days <int:1..1000>
```

| Attribute | Description |
|---|---|
| days | Retention period in days. The range is from 1 to 1000. |

| Parameter | Description |
|---|---|
| tableName | Specifies the name of the available database table. |

## 2.7.9 set service database schema-update

Allows manual initiation of the database schema-update process using the low impact schema update technique or the generic technique. The database schema is normally updated automatically via `svupdate`. Use these commands only if recommended

by Sandvine Support. While the normal schema update is generally harmless if there is no database schema update required, the generic version is guaranteed to impact database availability by an hour or more even if no changes are actually required.

```
set service database schema-update
set service database schema-update generic
```

## 2.7.10 set service db-monitor

Sets database monitoring functions.

**Syntax**

```
set service db-monitor config reload
set service db-monitor join-cluster
set service db-monitor restart
set service db-monitor start
set service db-monitor stop
```

| Attribute | Function |
|---|---|
| config reload | Reload a database monitor configuration |
| join-cluster | Join a database monitor to a cluster |
| restart | Restart a database monitor |
| start | Start a database monitor |
| stop | Stop a database monitor |

## 2.7.11 set service ip-redundancy

Actions for IP address sharing (redundancy) for hosts on a LAN.

```
set service ip-redundancy join-cluster
set service ip-redundancy leave-cluster
set service ip-redundancy release-mastership
```

| Attribute | Description |
|---|---|
| join-cluster | Rejoin a failed SPB to the IP redundancy cluster |
| leave-cluster | Leave the IP redundancy cluster |
| release-mastership | Release the node from mastership |

## 2.7.12 set service message-broker initialize

Reinitialize, and restart, the message broker when:

- Message broker configurations are directly edited in rc.conf.
- An exception occurs which the watchdog (process which monitors the exception/errors in message broker logs and recovers the message broker) does not know about, and the message is corrupted.
- File system corruption disrupts the Sonic configuration files.

## 2.7.13 set service message-broker metric

Enables/disables message-broker metric.

```
set service message-broker metric enable false
set service message-broker metric enable true
```

**Example:**

```
SRP> set service message-broker metric enable true
BrokerName:
DomainManagerTimeStamp: 2011-07-14 15:03:38 EDT
Enabled: Yes
BrokerName: AppBrkr7F000001
TimeStamp: 2011-07-14 15:03:38 EDT
Enabled: Yes
SRP> set service message-broker metric enable false
BrokerName:
DomainManagerTimeStamp: 2011-07-14 15:03:54 EDT
Disabled: Yes
BrokerName: AppBrkr7F000001
TimeStamp: 2011-07-14 15:03:54 EDT
Disabled: Yes
```

## 2.7.14 set service message-broker metric broker

Enable/disable a specific metric broker.

**Syntax**

```
set service message-broker metric broker <broker-name> enable false
set service message-broker metric broker <broker-name> enable true
```

## 2.7.15 set service message-broker network-element

Enables/disables message broker network element.

```
set service message-broker network-element name <name> enable false
set service message-broker network-element <name> enable true
```

| Parameter | Function |
|---|---|
| name | User-defined network element name. |

**Example:**

```
SPC>set service message-broker network-element <name> false
network-element successfully unblocked.
```

```
SPC>set service message-broker network-element <name> true
network-element successfully blocked.
```

**Note:**
You can find complete history of a network element state transition in `/usr/local/sandvine/var/spb/log/sonicmq-conn-monitor.log`.

# 2.7.16 set service nat private-ip-address

Creates a network address translation (NAT) mapping between a private IP address (possibly session-qualified) and a public IPv4 address and port range. The port range is expressed by providing the lowest and highest port numbers in the range.

```
set service nat private-ip-address <ip-address> public-ip-address <ipv4-address>
```

```
set service nat private-ip-address <ip-address> public-ip-address <ipv4-address> low-port
<int:0..65535> high-port <int:0..65535>
```

```
set service nat private-ip-address <ip-address> site <int> public-ip-address <ipv4-address>
```

```
set service nat private-ip-address <ip-address> site <int> public-ip-address <ipv4-address>
low-port <int:0..65535> high-port <int:0..65535>
```

| Attribute | Function |
|---|---|
| private-ip-address | A private IP address for which you want to create a NAT mapping. |
| public-ip-address | A globally routable unicast IP address. |
| low-port | The lower port number of the range associated with the NAT mapping. |
| high-port | The upper port number of the range associated with the NAT mapping. |
| site | The site number used to qualify the private IP address. |

| Parameters | Description |
|---|---|
| ip-address | An IPv4 or IPv6 address. |
| ipv4-address | An IPv4 address. |
| int:0..65535 | A port number in the range 0 to 65535. |
| int | An integer specifying the site number used to qualify the IP address. |

# 2.7.17 set service subscriber-management snapshot force

Forces a subscriber-management snapshot. In-memory database snapshots occur at regular intervals to persist the state, and minimize the work required when starting the application serve.

# 2.7.18 set service top-talker execute

Initiates the top-talker service.

# 2.7.19 set service truncollator run

Forces the truncollator service to run. The truncollator is a database admin process that removes statistics data from the database once the data exceeds its retention time and makes the recovered disk space available to the local file system. This is typically run automatically as part of an hourly cron task, but you can run it manually with this CLI command. A common reason to run this process manually is to recover disk space as soon as possible after reducing the retention time of one or more statistics when you want to relieve a disk capacity alarm.

**Example:**

```
Truncollator process ran successfully.

TRUNCOLLATOR STATUS
===================

Database   : sv_stat
Enabled    : true
Scheduled  : true
LastRunTime: 2011-12-08 12:58:38 EST

LAST RUN SUMMARY
================

Validating default configuration file
/usr/local/sandvine/etc/dataRetention.conf.default
Validating configuration file /usr/local/sandvine/etc/dataRetention.conf
Doing truncation/allocation of partitions on database: sv_stat
Truncated and re-allocated 1 partitions for table dns_domain_raw.
Truncated and re-allocated 1 partitions for table dns_mt_dist_raw.
Truncated and re-allocated 1 partitions for table dns_stats_raw.
Truncated and re-allocated 1 partitions for table dns_sub_stats_raw.
Truncated and re-allocated 1 partitions for table dts_basic_raw.
Truncated and re-allocated 1 partitions for table elem_classifier_prot_raw.
Truncated and re-allocated 1 partitions for table elem_classifier_stats_raw.
Truncated and re-allocated 1 partitions for table elem_histogram_prot_raw.
Truncated and re-allocated 1 partitions for table elem_histogram_stats_raw.
Truncated and re-allocated 1 partitions for table elem_interface_prot_raw.
Truncated and re-allocated 1 partitions for table elem_interface_raw.
Truncated and re-allocated 1 partitions for table elem_performance_raw.
Truncated and re-allocated 1 partitions for table internet_prot_raw.
Truncated and re-allocated 1 partitions for table malicious_traffic_raw.
Truncated and re-allocated 1 partitions for table mitigated_traffic_raw.
Truncated and re-allocated 1 partitions for table network_prot_raw.
Truncated and re-allocated 1 partitions for table network_stats_raw.
Truncated and re-allocated 1 partitions for table published_expr_stats_raw.
Truncated and re-allocated 1 partitions for table qoe_flowbwidth_dist_raw.
Truncated and re-allocated 1 partitions for table qoe_floweff_dist_raw.
Truncated and re-allocated 1 partitions for table qoe_userbwidth_dist_raw.
Truncated and re-allocated 1 partitions for table stats_detail_expected.
Truncated and re-allocated 1 partitions for table sub_prot_raw.
Truncated and re-allocated 1 partitions for table sub_stats_raw.
Truncated and re-allocated 1 partitions for table voip_stats_raw.
Truncation/allocation of database: sv_stat complete.
```

# 2.7.20 set service warm-standby Commands

These commands involve the database warm-standby system.

**set service warm-standby failover**

This command initializes the failover process and promotes a warm standby server to an active database server.

Log into the standby server as an administrator and then run the `set service warm-standby failover` CLI commmand. Press **Y** to confirm.

**set service warm-standby generate-key**

This command sets up a trust relationship between servers in the warm standby system. Both servers must run the `set service warm-standby generate-key` command to generate a public key to allow file transfer from the primary server to the standby server.

When prompted, accept `/usr/local/pgsql/.ssh/id_ds` (the default key file) and the default empty pass phrase.

# 2.7.21 set subscriber attribute-definition attribute

Sets an attribute definition in SandScript.

```
set subscriber attribute-definition attribute <attribute-name>
set subscriber attribute-definition attribute <attribute-name> audit <boolean>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> notifiable
<boolean>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> notifiable
<boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> reportable
<boolean>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> reportable
<boolean> notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> reportable
<boolean> notifiable <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> reportable
<boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> audit <boolean> values
<attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> ip-notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> ip-notifiable <boolean> values
 <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> notifiable <boolean> values
<attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> reportable <boolean>
set subscriber attribute-definition attribute <attribute-name> reportable <boolean> notifiable
 <boolean>
set subscriber attribute-definition attribute <attribute-name> reportable <boolean> notifiable
 <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> reportable <boolean> values
<attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> values
<attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 notifiable <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 reportable <boolean>
```

```
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 reportable <boolean> notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 reportable <boolean> notifiable <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 reportable <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> audit <boolean>
 values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> notifiable
<boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> notifiable
<boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> reportable
<boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> reportable
<boolean> notifiable <boolean>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> reportable
<boolean> notifiable <boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> reportable
<boolean> values <attribute-definition-values>
set subscriber attribute-definition attribute <attribute-name> visible <boolean> values
<attribute-definition-values>
```

| **Attribute** | **Function** |
|---|---|
| audit | Determines whether the changes in value of this attribute should be tracked. |
| ip-notifiable | Determines whether or not attributes should be included in IP assignment change notifications |
| notifiable | Determines whether or not change notifications should be sent for this attribute. |
| values | A comma-delimited list of the possible values for this attribute. |
| reportable | Determines whether or not this attribute should be archived and reported on. |
| visible | Determines whether or not this attribute is visible. |

| **Parameters** | **Description** |
|---|---|
| <boolean> | True or false |
| <attribute-definition-values> | User-specified attribute values |

| **Output** | **Description** |
|---|---|
| Name | Subscriber name |
| IsVisible | If true attribute is visible; if false attribute is not visible |
| IsNotifiable | If true attribute is notifiable; if false attribute is not notifiable |
| IsAudited | If true attribute is audited; if false attribute is not audited |
| IsReported | If true attribute is reported; if false attribute is not reported |
| Value | The value assigned to the attribute |
| Status | Either active or inactive |
| EffectiveTime | The effective time of the set |
| ExpiryTime | The expiry time of the set |

# 2.7.22 set subscriber ip

Configures a user-specified IP address for the subscriber.

```
set subscriber ip <ip-address> reconcile
set subscriber ip <ip-address> site <site-value:0..> reconcile
```

| Attribute | Function |
|---|---|
| ip | Specifies an IP address requirement. |
| site | Specifies a site number requirement. |
| reconcile | Adds specified parameters to the next cache miss notification. Triggers the SDE to resolve an IP mapping and send it to the SPB. |

# 2.7.23 set subscriber name

Sets a user-specified subscriber name.

```
set subscriber name <subscriber-name>

set subscriber name <subscriber-name> ip <ip-address>
set subscriber name <subscriber-name> ip <ip-address> site <site-value:0..>
set subscriber name <subscriber-name> attribute <attribute-name> value <value>
set subscriber name <subscriber-name> attribute <attribute-name> value <value> effective
<iso8601-date-time-zone>
set subscriber name <subscriber-name> attribute <attribute-name> value <value> effective
<iso8601-date-time-zone> expiry <iso8601-date-time-zone>
set subscriber name <subscriber-name> attribute <attribute-name> value <value> expiry
<iso8601-date-time-zone>
```

| Attribute | Function |
|---|---|
| name | Specifies a subscriber name. If there is a space in the name, enclose it in double quotes. For example: "test subscriber". |
| attribute | Specifies an attribute requirement. |
| value | Specifies a value requirement. |
| effective | Specifies an effective requirement. |
| expiry | Specifies an expiry requirement. |
| ip | Specifies an IP address requirement. |
| site | Specifies a site number requirement |

| Parameter | Description |
|---|---|
| <attribute-name> | User-specified attribute name |
| <value> | User-specified value |
| <iso8601-date-time-zone> | User-specified value time. For example, 2011-09-02T16:49:09.099Z. |

| Parameter | Description |
|---|---|
| <ip-address> | User-specified IP address |
| <site-value:0..> | User-specified site number used to qualify the IP address<br>**Note:**<br><site-value> is a positive 32-bit integer. |

| Output | Description |
|---|---|
| Name | Subscriber name |
| IsVisible | Attribute is visible - true or false |
| IsNotifiable | Attribute is notifiable - true or false |
| IsAudited | Attribte is audited - true or false |
| IsReported | Attribute is reported - true or false |
| Value | Value asigned to the attribute |
| Status | Active/Inactive |
| EffectiveTime | The effective time of the set |
| ExpiryTime | The expiry time of the set |

## 2.7.24 set subscriber public-ip-address

Adds the specified public IP address and port to the cache miss notification, which the SDE then reconciles.

```
set subscriber public-ip-address <ipv4-address> port <int:0..65535> reconcile
```

| Attribute | Function |
|---|---|
| public-ip-address | Specifies a globally routable unicast IP address. |
| port | Specifies the port number associated with the NAT mapping. |
| reconcile | Adds specified parameters to the next cache miss notification. Triggers the SDE to resolve an IP mapping and send it to the SPB. |

| Parameters | Description |
|---|---|
| ipv4-address | An IPv4 address. |
| int:0..65535 | A port number in the range 0 to 65535. |

# 2.8 show

The show command inspects system information without changing it.

# 2.8.1 show alarms

Shows a list of the current alarms (severity minor or greater) on the system, details about a specific alarm instance, or alarms of all severities (`show alarms all`).

If active, details include information about any variables associated with the alarm. Information that accompanied the clear notification is displayable for cleared alarms, but their indices are no longer shown in the general listing. The show alarms variant also notes the number of alarms that were not shown, because they are of a lower severity.

```
show alarms
show alarms <alarm-instance-id:0..>
show alarms <id:0..>

show alarms all
```

| Output | Description |
|---|---|
| AlarmId | ID for the alarm, used to identify the instance of the active alarm. Numbered from 1. |
| Severity | Alarm severity. Can be one of:<br>• critical - requires immediate attention.<br>• major - service is impacted.<br>• minor - service is not currently impacted, but the condition needs to be corrected.<br>• warning - notification of some event on the system.<br>• clear - a previously raised alarm has been cleared. |
| EventTime | Time at which the event was logged. |
| Model | Alarm model number. |
| Description | Description of the alarm. |

| Alarm-specific Output | Description |
|---|---|
| Alarm Model | The alarm model number. |
| Severities | The severities of the alarm. |
| AlarmText | Description of the alarm. |
| RaiseNotification | The notification sent when the alarm is raised. |
| ClearNotification | The notification sent when the alarm is cleared. |
| Description | A description of the alarm. |

# 2.8.2 show alarms history

Shows a list of all alarms generated, as inferred by any notifications that were logged.

```
show alarms history
```

```
show alarms history <id:1...>
```

```
show alarms history date <yyyy-mm-dd>
```

```
show alarms history date <yyyy-mm-dd> limit <limit:0..>
```

```
show alarms history limit <limit:0..>
```

The details of the alarm differ from the details of the notification in that they include information from the referenced alarm model. The default is set to list alarms resulting from the most recent 10 notifications on the current date.

If the output contains the words "Corrupted Log File", inspect the /var/log/notification.log file for possible reasons. For example:

```
EVENTDATE: 2012-06-14
=====================

TrapLogId Severity  EventTime              Model
--------- --------- --------- ------------------
81        [warning] 19:43:13                 14
--        [--]      --        Corrupted Log File
85        [clear]   19:43:21                 10
86        [clear]   19:43:34                 10

TrapLogId Description
--------- ----------------------------------------------------
81        Network interface administratively down: cluster 1-5
--        Information unavailable at MIB: Corrupted Log File
85        Service component online: ptsm
86        Service component online: ptsd
```

| Attribute | Function |
|---|---|
| date | The specific date for which alarm history is required, defined as yyyy-mm-dd |
| limit | Limits the number of rows to display |
| id | Trap Log ID for which history should be displayed |

| Output | Description |
|---|---|
| EventDate | Date on which the event occurred |
| TrapLogId | Specific trap log ID |
| Severity | Alarm severity: critical, major, minor or warning |
| EventTime | Date and time at which the alarm was raised. (For example, 2010-05-10 22:03:47) |
| Model | Alarm model number |
| Description | Description of the alarm action |

| Output | Description |
|---|---|
| EventDate | Date on which the event occurred |
| TrapLogId | Specific trap log ID |
| Severity | Alarm severity: critical, major, minor, warning, clear |
| EventTime | Date and time at which the alarm was raised. (For example, 2010-05-10 22:03:47) |
| Model | Alarm model number |

| Output | Description |
|---|---|
| Description | Description of the alarm action |
| Notification | Notification message |
| Value | |
| NotificationID | Sandvine MIB notification |
| Details | Explanation of the event |
| DISMAN-EVENT-MIB | |
| SNMPv2-MIB | |
| SANDVINE-MIB | |

## 2.8.3 show alarms model

Shows all alarm models available on this element, or the details for a specific alarm model.

```
show alarms model
show alarms model <id:1..>
```

| Specific Model Output | Description |
|---|---|
| Alarm Model | Alarm model number |
| Severities | Severities supported by this alarm |
| Alarm Text | Text associated with this alarm |
| Raise Notification | MIB for raising the notification |
| Clear Notification | MIB for clearing the notification |
| Description | Description of this alarm |
| NotificationId | MIB and alarm profile description |

| Output | Description |
|---|---|
| Model | Alarm model number |
| Severity | Severities supported by the alarm |
| NotificationId | MIB and alarm profile description |
| Description | Description of the alarm |

| Specific Model Output | Description |
|---|---|
| Alarm Model | Alarm model number |
| Severities | Severities supported by this alarm |
| Alarm Text | Text associated with this alarm |
| RaiseNotification | MIB for raising the notification |
| ClearNotification | MIB for clearing the notification |
| Description | Description of this alarm |

# 2.8.4 show cli sessions

Displays details regarding active CLI sessions.

```
show cli sessions
```

| Output | Description |
|---|---|
| ProcessID | ID of the CLI session |
| User | Login name of the user |
| StartTime | Date and time when the session started |
| LastActivityTime | Date and time when the last activity occurred |

# 2.8.5 show cluster

The show cluster suite of commands shows information about SPB clusters.

## 2.8.5.1 show cluster config

Displays the configuration details for the local cluster element.

| Parameter | Description |
|---|---|
| Enabled | Whether or not clustering has been enabled |
| ClusterName | The cluster name |
| NodeName | The name of this cluster node |
| IsMaster | Whether or not this cluster node is the cluster master |
| MasterNodeName | The name of the current cluster master node |
| LastElectionTime | The time at which the most recent mastership election occurred |
| ActiveNodes | A list of all active cluster nodes |
| ClusterConfiguration | A list of all nodes in the cluster configuration |
| LeaseTimeout | The cluster mastership lease timeout (in milliseconds) |
| ClusterWorkers | The number of worker threads available to process messages |

## 2.8.5.2 show cluster elements

Displays a list of remote cluster elements.

| Parameter | Description |
|---|---|
| NodeName | The name of this cluster node |
| NodeStatus | The status of the node |
| Local | Whether or not the node is the local node |
| Master | Whether or not the node is the cluster master |
| FirstContact | The time at which this node first received a message from the remote node |
| LastContact | The last time that this node received a message from the remote node |

| Parameter | Description |
|---|---|
| LocalIp | The IP address of this node |
| LocalPort | The port number of this node used for clustered communication |
| RemoteIp | The IP address of the remote node |
| RemotePort | The port number of the remote node used for clustered communication |
| ReceivedMsgCount | The total number of messages received from the remote node |
| TransmittedMsgCount | The total number of messages sent to the remote node |
| ReceivedByteCount | The total number of bytes received from the remote node |
| TransmittedByteCount | The total number of bytes sent to the remote node |

### 2.8.5.3 show cluster stats

Displays statistics for the cluster.

| Parameter | Description |
|---|---|
| ReadOpReceived | The number of read operations received |
| WriteOpReceived | The number of write operations received |
| WriteOpSent | The number of write operations sent |
| MessagesReceived | The total number of messages received |
| MessagesWritten | The total number of messages sent |
| BytesReceived | The total number of bytes received |
| BytesWritten | The total number of bytes sent |
| Disconnects | The number of cluster disconnections that have occurred |
| Elections | The number of cluster mastership elections that have occurred |

## 2.8.6 show config system accounting

This command displays the configuration settings for accounting.

```
show config system accounting queue-size
show config system accounting batch-size
show config system accounting send-interval
show config system accounting error-interval
show config system accounting tacacs+
```

| Attribute | Description |
|---|---|
| queue-size | The maximum number of accounting records that can be queued. |
| batch-size | The number of records that are sent at a time. |
| send-interval | The time, in millseconds, between sending batches of records. |
| error-interval | The delay, in millseconds, before retrying after an error. |
| tacacs+ | Remote accounting configuration using TACACS+.<br>For more information, see *show config system accounting tacacs+*. |

## 2.8.7 show config system accounting tacacs+

This command displays the configured TACACS+ accounting on the SPB.

```
show config system accounting tacacs+ enabled
show config system accounting tacacs+ servers
show config system accounting tacacs+ secret
show config system accounting tacacs+ timeout
show config system accounting tacacs+ login
show config system accounting tacacs+ debug
```

| Attribute | Description |
|---|---|
| server-pair | A space-separated list of one or two servers. |
| enabled | Accounting enabled or disabled. |
| secret | The secret key shared with the TACACS+ server. |
| timeout | The timeout in seconds for communicating with the TACACS+ server(s). |
| login | Whether or not a login is denied if the accounting record cannot be logged. |
| debug | Debugging enabled or displayed. |

## 2.8.8 show config system authentication

This command displays the configuration settings of RADIUS and TACACS+ authentication.

```
show config system authentication radius secret
show config system authentication radius servers
show config system authentication tacacs+
```

| Attribute | Description |
|---|---|
| secret | The secret shared with the RADIUS. |
| servers | A space separated list of RADIUS authentication servers. |
| tacacs+ | Authentication configuration using TACACS+. For more information, see *show config system authentication tacacs+*. |

## 2.8.9 show config system authentication tacacs+

This command displays the configured TACACS+ authentication on the SPB.

```
show config system authentication tacacs+ servers
show config system authentication tacacs+ enabled
show config system authentication tacacs+ secret
show config system authentication tacacs+ timeout
show config system authentication tacacs+ debug
show config system authentication tacacs+ service
show config system authentication tacacs+ default-group
show config system authentication tacacs+ default-shell
```

| Attribute | Description |
|---|---|
| server-pair | A space-separated list of one or two servers. |
| enabled | Authentication enabled or disabled. |
| secret | The secret key shared with the TACACS+ server. |
| timeout | The timeout in seconds for communicating with the TACACS+ server(s). |
| debug | Debugging enabled or disabled. |
| service | The name of the service used to authorize users. |
| default-group | The default privilege level for remote users. |
| default-shell | Default login shell. |

# 2.8.10 show interface configuration

Displays configuration details for all external data and control interfaces in the system.

```
show interface configuration
```

| Output | Description |
|---|---|
| Port | The name of the interface. |
| AdminStatus | Administrative status of the port - up or down. |
| OperStatus | Operational status of the port - up or down. |
| MTU | Maximum transmission unit size, in bytes, for the port.<br>**Note:** The MTU values on version 6.00 is 16,360. On version 6.20.04 is 15796. |
| Medium | Port medium:<br>• 1000BASE-SX<br>• 1000BASE-LX<br>• 1000BASE-CX<br>• 1000BASE-T<br>• 100BASE-LX/LX10<br>• 100BASE-FX<br>• 10BASE-BX<br>• 10BASE-PX<br>• 10GBase-SR<br>• 10GBase-LR<br>• 10GBase-LRM<br>• 10GBase-ER |
| IfAlias | Name of port if an alias has been specified (using `set config interface <interface> alias` ). |

| Output | Description |
|---|---|
| Function | The function that the interface currently serves. One of:<br>• subscriber - interface is used to intersect data traffic, facing subscribers; in other words the interface's Rx is upstream traffic.<br>• internet - interface is used to intersect data traffic, facing the internet; in other words the interface's Rx is downstream traffic.<br>• cluster - interface is connected to another PTS element in a cluster.<br>• service - interface is connected to a non-PTS service device (such as OCS, SRP). Spanning-tree is disabled.<br>• switch - interface is connected to a non-PTS service device (such as OCS, SRP). Spanning-tree is enabled.<br>• divert - interface is connected to a third-party divert host.<br>• none - interface is not used. An interface cannot be enabled if the function is none. Use when transitioning an interface between functions. |
| LagPort | Link Aggregation Group associated with the interface. |
| Shunt | Indicates if a data port is shunting packets. |

# 2.8.11 show interface counters

Shows statistics for system interfaces.

```
show interface counters
```

```
show interface counters mgmt1|mgmt2
```

To display continually updated data on stdout (refreshes every 2 seconds), use the `monitor` version. To terminate a monitor command, press **Ctrl-C**.

```
monitor interface counters
```

```
monitor interface counters mgmt1|mgmt2
```

| Output | Description |
|---|---|
| Port | Port name of the interface. |
| BytesIn | The number of bytes coming in. |
| BytesOut | The number of bytes going out. |
| PacketsIn | The number of packets coming in. |
| PacketsOut | The number of packets going out. |
| DropsIn | The number of packets dropped coming in. |
| DropsOut | The number of packets dropped going out. |

| Detailed Output | Description |
|---|---|
| UnicastPacketsIn | Number of incoming unicast packets. |
| MulticastPacketsIn | Number of incoming multicast packets. |

| Detailed Output | Description |
|---|---|
| BroadcastPacketsIn | Number of incoming broadcast packets. |
| UnicastPacketsOut | Number of out going unicast packets. |
| MulticastPacketsOut | Number of out going multicast packets. |
| BroadcastPacketsOut | Number of out going broadcast packets. |
| 64BytePackets | Number of packets with a size of 64 Bytes. |
| 64to127BytePackets | Number of packets with sizes in the range 64 Bytes to 127 Bytes. |
| 128to255BytePackets | Number of packets with sizes in the range 128 Bytes to 255 Bytes. |
| 256to511BytePackets | Number of packets with sizes in the range 256 Bytes to 511 Bytes. |
| 512to1023BytePackets | Number of packets with sizes in the range 512 Bytes to 1023 Bytes. |
| 1024to1518BytePackets | Number of packets with sizes in the range 1024 Bytes to 1518 Bytes. |
| DiscardsIn | Number of inbound packets chosen to be discarded, even though no errors were detected, to prevent their being deliverable to a higher-layer protocol. |
| ErrorsIn | Number of errors on inbound traffic. |
| DiscardsOut | Number of outbound packets chosen to be discarded, even though no errors had been detected, to prevent their being deliverable to a higher-layer protocol. |
| ErrorsOut | Number of errors on outbound traffic. |
| AlignmentErrors | Total number of packets received that had a length between 64-1518 octets (excluding framing bits, but including FCS octets), but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error) |
| FcsErrors | Number of frames received on a particular interface that are an integral number of octets in length but do not pass the FCS check. This count does not include frames received with a frame-too-long or frame-too-short error. |
| FrameTooLong | Number of errors related to frames that are too long. |
| SymbolErrors | Number of symbol errors. |

# 2.8.12 show interface management

Shows the configuration and status of the management interfaces.

```
show interface management
```

| Aggregate Output | Description |
|---|---|
| Port | Indicates that this output concerns the management port. |
| Redundancy | Indicates if this port is configured with redundancy enabled (failback) or not. |
| IPAddress | The IP address of this port. |
| AdminStatus | Administrative status - up or down. |
| OperStatus | Operational status - up, down, or degraded. |
| PrimaryPort | If failback is configured, indicates which port is acting as the primary port. |
| Secondary Port | If failback is configured, indicates which port is acting as the secondary port. |

| Aggregate Output | Description |
|---|---|
| Mtu | The Maximum Transmission Unit (MTU) size. |

| Member Interfaces | Description |
|---|---|
| Port | The name of the port. |
| AdminStatus | Administrative status - up or down. |
| OperStatus | Operational status - up or down. |

| Output | Description |
|---|---|
| Port | Indicates that this output concerns the management port. |
| Redundancy | Indicates if this port is configured to failback or not. |
| IPAddress | The IP address of this port. |
| AdminStatus | Administrative status - up or down. |
| OperStatus | Operational status - up, down, or degraded. |
| PrimaryPort | If failback is configured, indicates which port is acting as the primary port. |

| Output | Description |
|---|---|
| Port | The name of the port. |
| Secondary Port | If failback is configured, indicates which port is acting as the secondary port. |
| MTU | The Maximum Transmission Unit (MTU) size. |

## 2.8.13 show interface network

Shows details for the service and management network interfaces.

| Output | Description |
|---|---|
| Port | Name of the port, either service or management. |
| AdminStatus | Administrative status - up or down |
| OperStatus | Operational status - up or down |
| MTU | Maximum transmission unit size, in bytes, for the port |
| IPAddresses | Assigned IP address of the port. If the IP address is not configured for the given interface, NA is displayed. |

## 2.8.14 show interface rate

Shows in and out bitrate, packet rate, and drop rate for data interfaces, cluster interfaces, and management interfaces.

```
show interface rate
```

To display continually updated data on stdout, use the `monitor` version. To terminate a monitor command, press **q**.

| Output | Description |
|---|---|
| Port | Port name of the interface. |
| In (bps) | Reception rate, in bits per second. |
| Out (bps) | Transmission rate, in bits per second. |
| PacketsIn (pps) | Reception rate, in packets per second. |
| PacketsOut (pps) | Transmission rate, in packets per second. |

# 2.8.15 show log authentication

This command displays the contents of the authentication log file.

```
show log authentication
```

# 2.8.16 show network-element

Displays the available network elements.

```
show network-element
```

```
show network-element cluster <network-element-cluster-name> element <network-element-name>
statistic-definition
```

| Output | Description |
|---|---|
| Name | Name of network element |
| SerialNumber | Displays the serial number |
| DeviceClass | The device class |
| OperStatus | Current operational status |
| SystemVersion | The system version |
| LastHearbeatTime | The last time the host sends heartbeat messages |
| Cluster | Cluster to which network element belongs |
| Status | Current operational status |
| LastStatPublishedTime | Last time statistics were published |

**Example:**

```
SPC> show network-element

DISCOVERED ELEMENTS
===================

Name                            SerialNumber   DeviceClass OperStatus SystemVersion
LastHearbeatTime
------------------------------- -------------- ----------- ---------- -------------
-----------------------
TPC-BA2-31.lab.blr.sandvine.com SDVNTPC-BA2-31 SPB         [online]   6.40.01
2013-12-16 16:26:53 IST

STATS PUBLISHING ELEMENTS
=========================
```

```
Name                            Cluster        Status     LastPublishedTime
------------------------------- -------------- ---------- ----------------------
TPC-BA6-16.lab.blr.sandvine.com SANDVINE-1 [active] 2013-09-11 11:42:44 IST
```

## 2.8.17 show network-element-cluster

Shows the cluster name and the status of the cluster.

| Output | Description |
|---|---|
| ClusterName | Cluster to which network element belongs |
| Status | Current device status of the element |

## 2.8.18 show service capability-exchange

Displays the status of capability exchange between the PTS/SDE and the SPB.

```
show config service capability-exchange enabled
show config service capability-exchange heartbeat-interval
```

| Parameter | Description |
|---|---|
| enabled | Capability exchange enabled or disabled. |
| heartbeat-interval | The interval, in seconds, at which the SPB sends heartbeat messages to the PTS/SDE to check if the connection is alive. |

**Example:**

```
SPC# show config service capability-exchange heartbeat-interval

heartbeat-interval: 300
```

## 2.8.19 show service control-center package

Shows information about packages deployed on the system. When using this command, you can specify the package ID number, show all packages, or show all the active packages.

```
show service control-center package
show service control-center package <id:0..>
show service control-center package active
```

| Output | Description |
|---|---|
| id | The package sequence number. See *Configuration Commands* for additional information. |
| Name | The package that Control Center deployed. |
| Version | The package version. |
| Size | The package size. |

| Output | Description |
|---|---|
| IsActive | Whether the package is active on the element. Possible values are `true` or `false`. |
| ActivationTime | Time when the deployment initiated the `svreload` command and activated the package on the element. |
| DeployTime | Time when the element received the first request in a package deployment. Note that DeployTime and ActivationTime differ by seconds. |

# 2.8.20 show service database

**show service database status**

Provides a brief overall status of the Sandvine statistics database.

| Status Output | Description |
|---|---|
| HostAddress | The IP address of the primary database server. This might be the local server depending on the server from where the CLI command was run. |
| Connected | Indicates whether the application server is currently connected to the database. |
| SchemaVersion | The SPB product version that the current database schema is meant for. This should match the PackageVersion output unless an upgrade/downgrade is in process. |
| PackageVersion | The SPB product version that the currently deployed schema package is meant for. This should match the SchemaVersion output unless an upgrade/downgrade is in process. |
| SchemaUpdateStatus | The status of the most recent schema update. The status is generally [completed], but it could be [running] if an upgrade/downgrade is in process, or [failed] if there was a problem with the latest schema upgrade/downgrade. |
| ActiveQueries | The number of concurrent queries actively running against the database at the time the command was run. See the CLI command `show service database queries current` for more details. |
| Size (GB) | The approximate size (in Gigabytes) of the database cluster. |

**show service database growth**

Shows the approximate size of the database on a daily basis as well as the change in size (growth) since the previous day. The command can display the history up to a year. Use the optional [date] to limit the output to display growth from a particular date till the current day. Enter the date in the format yyyy-mm-dd.

```
show service database growth
show service database growth date <YYYY-MM-DD>
```

| Parameter | Description |
|---|---|
| <YYYY-MM-DD> | The date for which you want to view the growth data. |

| Output | Description |
|---|---|
| Date | The date corresponding to the growth data. |
| Size (GB) | The approximate size (in Gigabytes) of the database cluster. |
| Growth(GB) | The change in size (growth) of the database since the previous day in Gigabytes. |

### show service database table-groups

Gives a high level overview of the disk space and the number of rows associated with different classes of statistics in the database. This command helps to identify statistics that may need the retentions modified to avoid running out of disk space.

| Output | Description |
|---|---|
| TableGroup | Name of the table group. |
| TableGroupSize(MB) | Size of the table group in Megabytes. |
| RowCount | Number of rows in the table group. |

### show service database table-group

Expands on the previous command by identifying space usage and row counts for specific tables within the table group specified.

```
show service database table-group <name>
```

| Parameter | Description |
|---|---|
| <name> | User-defined database table group name. |

| Output | Description |
|---|---|
| TableName | Name of a table in a specified table group. This corresponds to the statistic name in */usr/local/sandvine/etc/dataRetention.conf* that you can edit to adjust the statistics retention times. Refer to the *SPB Administration Guide* for details. |
| TableSize(MB) | Size of the table in Megabytes. |
| RowCount | Number of rows in the table. |

**Example:**

```
show service database table-group sub-info

TableName               TableSize(MB) RowCount
----------------------- ------------- -----------------
subscriber_attr_audit       119,139       663,874,880
sub_ip_assignment_hist        8,379        58,088,948
subscriber                    1,644         2,592,482
sub_ip_assignment               418         2,050,000
subscriber_attr_value           278         2,050,000
nat_mapping_hist                 20                 0
session_attr_audit                1                 0
```

This output shows that the majority of disk space in this case is consumed by subscriber_attr_audit (119 GB) with approximately 663 million rows. This could be a candidate statistics table where you should reduce retention to conserve space depending on business needs. See the CLI command `show service database table <database-table-name> growth` for more information.

### show service database table <name> growth

Displays the rate of growth of a particular table to help determine the amount of disk space and number of rows that you can expect in the table once the retention time of the table is met.

| Parameter | Description |
|---|---|
| <name> | User-defined database table name. |

| Output | Description |
|---|---|
| TableName | Name of a table in a specified table group. This corresponds to the statistic name in */usr/local/sandvine/etc/dataRetention.conf* that you can edit to adjust the statistics retention times. Refer to the *SPB Administration Guide* for details. |
| Date | The date corresponding to the growth data. |
| Size (MB) | The approximate size (in Megabytes) of the table. |
| Growth(GB) | The change in size (growth) of the table since the previous day in Megabytes. |

**Example:**

```
show service database table subscriber_attr_audit growth

TableName              Date       Size(MB)     Growth(MB)
---------------------- ---------- ------------ ----------
subscriber_attr_audit 2013-03-23        3,403
subscriber_attr_audit 2013-03-24       45,850     42,447
subscriber_attr_audit 2013-03-25       72,645     26,794
subscriber_attr_audit 2013-03-26      103,167     30,521
```

The output shows that the table is growing anywhere from 26 GB to 42 GB per day. As the default retention of this statistic table is 33 days (see */usr/local/sandvine/etc/dataRetention.conf*), this table will ultimately consume somewhere between 858 GB and 1.4 TB of disk space. If this is not acceptable, you can change the retention period of this statistic.

### show service database tables overflow

The truncollator process on the SPB maintains a table for each statistic type, which is referred to as an overflow table. This table is only used in cases where the truncollator process is either not running or is unable to run successfully against one or more statistic tables for approximately three consecutive days. Alarm model 3101: Database Table Overflow is triggered if use of an overflow table is likely to occur in less than 24 hrs, unless the truncollator can process the underlying statistic table. Once statistics start to be sent to an overflow table, statistic publishing performance and report performance start to degrade.

Use this CLI command to see the tables that are affected. If the output of the command is only one or two tables, the probable causes are that a long running report against those tables or the same report being run multiple times against those tables are likely blocking the truncollator process from running. If there are many tables listed, then there may be a problem with the truncollator process.

Investigate the cause using commands like `show service database queries current` and `show service truncollator status`. Once the truncollator is able to process the underlying statistic table(s), the alarm clears and this command does not return any output.

### show service database queries current

Lists the currently active database queries along with the time they started and their Proccess Identifier (PID). You can determine the amount of memory and CPU being consumed for a given query from the PID in a top command. Queries longer than 1000 characters are truncated at that limit.

| Output | Description |
|---|---|
| Pid | The PID of the active database query. |
| QueryStart | The time the query started. |
| CurrentQuery | The currently active database query. |

### show service database users

Shows the different user roles currently known and specifies whether they are password protected. By default, the database user roles are not password protected. These are not Unix login IDs.

| Output | Description |
|---|---|
| Username | The database user name. |
| PasswordProtected | Specifies whether the account is password protected. |
| Description | The description of the database user. This can be an administrator or an application. The description provides the context for the connection. |

**show service database schema-update history**

Provides a history of successful database schema updates and the time when the updates were applied.

| Output | Description |
|---|---|
| Package | Name of the package installed. |
| InstallTime | Time when the package was installed. |

**show service database transaction-id status**

The SPB is configured such that any table containing data older than 1 billion transactions is added to the autovacuum process queue. On some systems with high sustained transaction rates (several thousands per second) and disk I/O, manual intervention may be required to vacuum some of the tables.

This command shows the number of tables within the database that contain rows older than some range of database transactions.

**Example:**

```
LessThan100Million   : 0
GreaterThan100Million: 11,267
GreaterThan500Million: 215
GreaterThan1Billion  : 0
GreaterThan1.5Billion: 0
GreaterThan2Billion  : 0
```

In this example, the oldest row in the vast majority of tables is between 100-500 million transactions old, while 215 tables have rows between 500 million and 1 billion transactions old. These are most likely tables containing historical data. The autovacuum process will not affect a table until there is at least one row in it that has not been updated in over 1 billion transactions. At this point, Alarm Model 3102: Auto Vacuum Process Falling Behind is triggered.

Use this command to see how many tables are in the autovacuum queue. The number of tables should decrease over time (days or weeks) as the autovacuum process updates them.

**show service database transaction-id top**

Lists the top N tables that contain the oldest transaction rows.

```
show service database transaction-id top <int:1..25>
```

| Output | Description |
|---|---|
| TableName | Name of the table containing the oldest transaction rows. |
| RelFrozenTransactionId | The transaction ID for a row. |
| Age | Age of a row in a table. |

**Example:**

```
  show service database transaction-id top 7

TableName                    RelFrozenTransactionId         Age
---------------------------- ---------------------- -----------
synflood_detect_020                     525,280,298 972,892,918
spam_detect_action_020                  525,280,298 972,892,918
```

```
packet_sig_detect_action_020            525,280,298 972,892,918
spam_detect_020                         525,280,298 972,892,918
userbwidth_tx_detect_020                525,280,298 972,892,918
addrscan_detect_020                     525,280,298 972,892,918
packet_sig_detect_020                   525,280,298 972,892,918
```

This example output shows that the table with the oldest untouched row is synflood_detect_020. Note that this does not necessarily mean that this table has the oldest stats data in the database or it is approaching an age of 1 billion. Once the age of the table reaches 1 billion, the autovacuum process resets the transaction IDs on all the rows so that they are not included in search results for at least 1 billion transactions. If the age of the oldest row on any table exceeds 1.5 billion, Alarm Model 3102: Auto Vacuum Process Falling Behind is raised suggesting that manual intervention, with assistance from Sandvine Support, may be required to manually vacuum some of the top N tables.

**show service database transaction-id estimate**

In cases where Alarm Model 3102: Auto Vacuum Process Falling Behind is triggered, this command can be used to determine how many rows need to be processed by the autovacuum process and how much data they represent. If the alarm is not triggered, this command will display an empty output.

| Output | Description |
|---|---|
| TableName | Name of the table containing data older than 1 billion transactions. |
| Rows | Number of rows in the table containing data older than 1 billion transactions. |
| Size (GB) | The approximate size (in Gigabytes) of the rows. |

# 2.8.21 show service database retention

Displays the configured retention periods for parititoned database tables.

```
show service database retention
```

| Output | Description |
|---|---|
| BaseTableName | List of available partitioned database table names. |
| RetentionPeriod(days) | Configured retention periods for parititoned database tables. |

# 2.8.22 show service db-monitor config

Shows the database monitor configuration.

# 2.8.23 show service db-monitor status

Shows database monitor status.

## 2.8.24 show service heartbeat-monitor messages

Shows a detailed and compressed version of the recently received (50) heartbeat monitor messages.

```
show service heartbeat-monitor messages detail
show service heartbeat-monitor messages
```

| Recent Heartbeat Output | Description |
|---|---|
| Index | An index number |
| ElementName | Element that sent the heartbeat message |
| ClusterName | Cluster name the element belongs to |
| SystemType | What type of system this element is |
| Version | Version of the installed software |
| PlatformType | The hardware description for this element |
| Managed | Indicates if this element is managed |
| SerialNumber | The serial number of this element |
| OperationalState | The current operation state of the element |
| Time | Time of the last heartbeat message sent by this element |
| Interval | The interval at which this element sends heartbeat messages |
| Software | The software installed on this element |
| LastSystemBootTime | The last time this element was booted |

## 2.8.25 show service id-allocation name

Shows the location name and an ID allocated to it in the SPB.

```
SPB> show service id-allocation name <name>
```

| Output | Description |
|---|---|
| Id | Indicates an ID allocated to the name in SPB table. |
| Name | Indicates a name entered in SPB table. |

If the name provided does not exist in SPB table, an output similar to this appears:

```
Name does not exist.
```

## 2.8.26 show service id-allocation id

Shows the location name associated with an ID in the SPB.

```
SPB> show service id-allocation id <id>
```

| Output | Description |
|---|---|
| Id | Indicates an ID allocated to the name in the SPB table. |
| Name | Indicates a name entered in the SPB table. |

If the location name provided does not exist in the SPB table, an output similar to this appears:

```
Name does not exist.
```

# 2.8.27 show service id-allocation mappings

This CLI command displays all ID mappings.

```
SPB> show service id-allocation mappings
```

An output similar to this appears:

```
ID,Name,CreateTime
1,loc1,2013-08-26 05:49:16.794703+00
2,loc2,2013-08-26 05:49:26.736049+00
```

# 2.8.28 show service id-allocation

Shows number of location names and IDs created in the SPB along with other details listed in table.

```
SPB> show service id-allocation
```

| Output | Description |
|---|---|
| IdsAllocated | Indicates number of IDs allocated to names in the SPB. |
| IdsAllocatedInLast24hrs | Indicates number of IDs allocated to names in the SPB, in the last 24 hours. |
| PercentageUsed | Indicates SPB usage, in percentage, for the operations performed on it. |
| NumberOfLookupsFailed | Indicates the number of failed name or ID searches. |

# 2.8.29 show service ip-redundancy status

Shows status of IP redundancy.

| Output | Description |
|---|---|
| VirtualRouterID | The ID of the virtual router |
| Interface | The interface |
| IPAddress | The IP Address |
| Priority | The priority |
| Status | The status |

## 2.8.30 show service ip-user-map config

Shows the configuration of IP Mapper variables.

## 2.8.31 show service ip-user-map monitor config

Shows IP mapper monitor configuration variables.

| Output | Description |
|---|---|
| Enabled | Indicates if IP mapper monitor is enabled. |
| DegradedStateProcessingEnabled | Indicates if degraded state processing when monitoring IP mapping is enabled. |
| DegradedStateRisingThresholdQueueSizePercent | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 75. |
| DegradedStateFallingThresholdQueueSizePercent | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 65. |
| DegradedStateIpAssignmentHistoryEnabled | Indicates if IP assignment history for the degraded state is enabled. |
| DegradedStateSetLoginAttributesEnabled | Indicates if set log in attributes for the degraded state is enabled. |
| DegradedStateSetLogoutAttributesEnabled | Indicates if set log out attributes for the degraded state is enabled. |
| DegradedStateProcessLoginsAsLogoutsEnabled | Indicates if processing logins as logouts in degraded state is enabled. |
| ForcedStateTransitionMode | Indicates if forced transmission mode is enabled. |

## 2.8.32 show service ip-user-map monitor stats

Shows IP Mapper Monitor runtime statistics.

| Output | Description |
|---|---|
| Date | Date |
| OldState | Old state |
| NewState | New state |
| Lag(secs) | Lag time, in seconds |
| UnparsedPacketsQueueSize | Unparsed packet queue size |
| ParsedPacketsQueueSize | Parsed packets queue size |
| LoginsProcessedAsLogouts | Number of logins processed as logouts |
| DiscardedUnparsedPackets | Number of discarded unparsed packets |
| DiscardedParsedPackets | Number of discarded parsed packets |

# 2.8.33 show service ip-user-map stats

Shows IP mapper runtime statistics.

| Output | Description |
|---|---|
| CurrentQueueSize | The current size of the queue |
| CurrentLag(secs) | The current lag in seconds |
| PacketInputRate | The packet input rate |
| PacketParsingRate | The rate at which packets are parsed |
| LoginRate | The login rate |
| LogoutRate | The logout rate |
| PacketsDropped | The number of dropped packets |
| AttributeMapRate | The rate at which attributes are being mapped |
| HighestQueueSize | The highest queue size |
| HighestQueueSizeTime | When the highest queue size was recorded |
| AverageAssignIpsBatchSize | The average batch size for assigning IPs |
| AverageUnassignIpsBatchSize | The average batch size for unassigning IPs |
| AverageSetAttributesBatchSize | The average batch size for setting attributes |
| SubscriberServicesErrors | The number of subscriber services errors |
| SubscriberServicesRetry | The number of subscriber services retry attempts |

| RADIUS Stats Output | Description |
|---|---|
| PacketCountAcctRequest | Packet count accounting requests |
| PacketCountAcctStart | Packet count accounting starts |
| PacketCountAcctKeepAlive | Packet count keep accounting alives |
| PacketCountAcctStop | Packet count accounting stops |
| PacketCountAcctResponse | Packet count accounting responses |
| AcctRepliesSent | Number of accounting replies sent |
| PacketCountToBeMerged | Packet counts to be merged |
| PacketCountMerged | Actual packet counts merged |
| PacketCountMergeKeyMissing | Packet counts that were missing the merge key |
| PacketCountUnmatchedMerge | Packet counts that had an unmatched merge |
| PacketCountCoAAckSent | Packet counts that had a CoA acknowledgement sent |
| RadiusErrors | Number of RADIUS errors |
| LogoutsWithDifferentSessionId | Number of log outs that had a different session ID |
| SessionContinues | Number of session continues |
| CountCannotParseSubscriberName | Count of subscriber names that couldn't be parsed |

| RADIUS Stats Output | Description |
|---|---|
| CountCannotParseIpAddress | Count of IP addresses that couldn't be parsed |
| PacketCountTotal | Total number of packets |
| PacketCountEarlyRadius | Total number of early RADIUS packets |
| PacketCountLateRadius | Total number of late RADIUS packets |
| CountInvalidRadiusStops | Total number of invalid RADIUS stops |

| DHCP Stats Output | Description |
|---|---|
| InvalidPacketCount | Count of invalid packets |
| BadClientAddresses | Count of bad client addresses |
| DHCPErrors | Count of DHCP errors |

# 2.8.34 show service message-broker

Shows message broker information with attributes such as connections, durable subscriptions, metrics, routes, subscriptions, and status.

```
show service message-broker connections
show service message-broker connections broker <name>
show service message-broker connections user <name>
show service message-broker connections host <name>
show service message-broker network-element
show service message-broker network-element <name>
show service message-broker durable-subscriptions broker <name>
show service message-broker durable-subscriptions client <name>
show service message-broker durable-subscriptions network-elements
show service message-broker durable-subscriptions network-elements broker <name>
show service message-broker durable-subscriptions network-elements serial
<subscription-client-id>
show service message-broker durable-subscriptions network-elements serial
<subscription-client-id> broker <name>
show service message-broker durable-subscriptions subscription <name>
show service message-broker durable-subscriptions topic <name>
```

```
show service message-broker durable-subscriptions user <name>
show service message-broker hierarchy config
show service message-broker metric
show service message-broker metric broker <name>
show service message-broker route config
show service message-broker route stats
show service message-broker routes
show service message-broker subscriptions broker <name>
show service message-broker subscriptions broker <name> user <name>
show service message-broker subscriptions broker <name> user <name> connection-id <string>
show service message-broker subscriptions broker <name> user <name> connection-id <string>
durable
show service message-broker subscriptions broker <name> user <name> connection-id <string>
non-durable
show service message-broker status
```

| Attribute | Function |
|---|---|
| broker | User-defined broker name. |
| client | User-defined client name. |
| config | Configuration. |
| connection-id | The ID associated with the connection between a client and broker. |
| connections | Connection information of brokers. |
| durable | A subscription where the client receives all messages published on a topic, even when the client connection is not active. |
| durable-subscriptions | Durable subscriptions information. |
| hierarchy | Message brokers in a hierarchy. |
| host | User-defined host name. |
| metric | Performance metrics. |
| network-elements | Connection state of the network element with message broker. |
| non-durable | A subscription where the client receives all messages published on a topic, only when the client connection is active. |
| pts | PTS platforms only. |
| route | Route configuration information about datahome and Control Center. |
| routes | Route definitions for datahome and Control Center. |
| serial | Serial number. |
| stats | Route statistics information about datahome. |
| status | Summary information about the brokers in a cluster. |
| subscription | User-defined subscription. |
| subscriptions | Subscription information with connection and session details. |

| Attribute | Function |
|---|---|
| topic | User-defined topic. |
| user | User-defined user. |

| Parameter | Function |
|---|---|
| name | User-defined broker, client, user, host, subscription, or topic name |
| subscription-client-id | User-defined client ID for subscription |
| string | Identity of a connection |

| Output | Description |
|---|---|
| BrokerName | The broker name, for example, DomainManager. |
| Client ID | The client ID. |
| Count | The number of messages in the subscription. |
| DeviceType | The element type: PTS or SDE. |
| Size | The number of bytes for the messages in the subscription. |
| HostName | The name of the PTS host, for example, example.sandvine.com. |
| LastConnected | This will either give the time and date of the last connection or say connected. |
| SubscriptionName | The name of the subscription, for example, JMXCLIENT/10_131_6_146/2949795e:1306424ded9:-8000. |
| TopicName | The subscription topic, for example, SonicMQ.mf.JMXCLIENT.10_131_6_146.2949795e:1306424ded9:-8000. |
| UserName | The user, for example, Administrator. |
| Identity | The connection ID. For example, SDVNTPC-D11-20~20537~11863. |
| Host | The host name. For example, localhost. |
| ConnectionType | The type of connection. |
| Session | The session ID of the connection. |
| Type | The subscription type. For example, durable or non-durable. |
| ConnectedTime | The time when the client connects to the SonicMQ message broker. |
| MessageCount | Number of messages in a topic. |
| MessageSize | Total size of messages in a topic. |
| SerialNumber | Serial number of a host |
| HostName | A given name for a host. |
| DeviceType | A Component like PTS. |
| ModifiedTime | Duration in date and HH:MM:SS format when a connection with a host is modified.<br>**Note:**<br>HH:MM:SS indicates hours, minutes and seconds.<br>Example:<br>When a connection with a host is modified from normal to blocked or vice versa. |

| Output | Description |
|---|---|
| ConnectionState | The present state of a host. |
| ConnectionStateFrom | It is the previous state of a network element. The states are:<br>• None is when there is no connection from the host to other machine.<br>• Normal is when the host and other machine are connected successfully.<br>• Blocked is when a host is blocked for other to access. |
| ConnectionStateTo | It is the present state of a network element. The states are:<br>• Normal is when the host and other machine are connected successfully.<br>• Blocked is when a host is blocked for other to access. |

# 2.8.35 show service nat

Shows statistics about the functioning of Network Address Translation (NAT) and a list of specified NAT mappings. The SPB uses the NAT tables to identify unique subscriber sessions.

```
show service nat stats
show service nat private-ip-address <ip-address>
show service nat private-ip-address <ip-address> site <int>
show service nat public-ip-address <ipv4-address>
show service nat public-ip-address <ipv4-address> low-port <int:0..65535> high-port
<int:0..65535>
show service nat private-ip-address <strict-ip-address> history
show service nat private-ip-address <strict-ip-address> history date <yyyy-mm-dd>
show service nat private-ip-address <strict-ip-address> history limit <limit>
show service nat private-ip-address <strict-ip-address> site <int> history
show service nat private-ip-address <strict-ip-address> site <int> history date <yyyy-mm-dd>
show service nat private-ip-address <strict-ip-address> site <int> history limit <limit>
show service nat public-ip-address <strict-ipv4-address> low-port <int> history
show service nat public-ip-address <strict-ipv4-address> low-port <int> history date <yyyy-mm-dd>
show service nat public-ip-address <strict-ipv4-address> low-port <int> history limit <limit>
```

| Attribute | Function |
|---|---|
| stats | NAT mapping statistics. |
| private-ip-address | IP address in the private network used for looking up the NAT mapping. Multiple mappings may exist. |
| high-port | The upper port number of the range associated with the NAT mapping. |
| history | Identifies the NAT mapping history, which has a default of 100 entries ordered by the assigned time. |
| history date | Identifies NAT mappings that took place after a specified date. |
| history limit | Identifies NAT mappings that took place after a specified date. This information is ordered by the assigned date. |
| low-port | The lower port number of the range associated with the NAT mapping. |
| public-ip-address | Public IP address used for looking up the NAT mapping. Multiple mappings may exist. |
| site | The site number used to qualify the private IP address. |

| Parameters | Description |
|---|---|
| date | The date, using the yyyy-mm-dd format, that NAT assignment history is required from. |
| ip-address | An IPv4 or IPv6 address. |
| int | An integer specifying the site number used to qualify the IP address. |
| int:0..65535 | A port number in the range 0 to 65535. |
| ipv4-address | An IPv4 address. |
| limit | This limits the number of rows to display. |
| strict-ip-address | Specifies either an IPv4 or IPv6 address. |
| strict-ipv4-address | Specifies an IPv4 address. |

| Output | Description |
|---|---|
| InUseByteCount | Number of Bytes currently used in the in-memory database. |
| NatCount | Number of NAT mappings in the SPB. |
| ConfiguredMaxCapacity | Maximum number of NAT mappings that you can create in the SPB. |
| ConfiguredByteCount | Maximum Bytes configured in the SPB to store the NAT mappings. |
| PercentFull | Percentage of the ConfiguredByteCount that is occupied. |
| AvailableByteCount | Free Bytes available in ConfiguredByteCount to store NAT mappings. |
| PrivateIP | The private IPv4 or IPv6 address associated with the NAT mapping. |
| PublicIP | The public IPv4 address associated with the NAT mapping. |
| LowPort | The lower port number of the range associated with the NAT mapping. |
| HighPort | The upper port number of the range associated with the NAT mapping. |
| AssignedTime | Timestamp when the private IP was mapped to the public IP and port range. |

## 2.8.36 show service reporting report-definitions

Shows information about reports.

## 2.8.37 show service reporting request-history

Shows report request history across all reports.

| Output | Description |
|---|---|
| ReportDefinition | The name of the defined report. |
| RunCount | The number of times the report has been run. |

## 2.8.38 show service reporting request-history report-definition

Shows report request history for a user-defined report name.

```
show service reporting request-history report-definition <report-name>
```

## 2.8.39 show service reporting request-status

Shows a summary of report requests.

| Output | Description |
|---|---|
| RequestId | Request ID |
| ReportDefinition | Report definition |
| StartTime | Report start time |
| ElapsedTime(hh:mm:ss) | Elapsed time for the report |

## 2.8.40 show service reporting request-status request-id

Shows report request status for a user-defined report request ID.

```
show service reporting request-status request-id <report-request-id>
```

## 2.8.41 show service route

Shows information about the service route.

**Syntax**

```
show service route
show service route inet
show service route inet6
```

| Attribute | Function |
|---|---|
| inet | Service route for inet |
| inet6 | Service route for inet6 |

| Output | Description |
|---|---|
| Destination | IP address of the route destination |
| Gateway | Gateway |
| Flags | Flag for the route |
| Refs | References for the route |
| Use | Use by count |
| Netif | Network device ID |

| Output | Description |
|---|---|
| Expire | Expiry |

# 2.8.42 show service stats-collection

Shows details about the statistics collection service.

**Syntax**

```
show service stats-collection config
show service stats-collection detail
show service stats-collection detail statistic-definition <statistic-definition-name>
show service stats-collection exception-log
show service stats-collection expected-stats cluster <network-element-cluster-name> element
<network-element-name>
show service stats-collection processing-stats statistic-definition <statistic-definition-name>
show service stats-collection statistic-definitions
show service stats-collection stats
show service stats-collection status
show service stats-collection auto-deactivate
show service stats-collection auto-deactivate cluster <network-element-cluster-name> element
<network-element-name>
```

| Attribute | Function |
|---|---|
| config | Asks for the current statistics collection service configuration. |
| detail | Asks for last published statistics information. |
| statistic-definition | Defines all statistics. |
| exception-log | Describes the exceptions that the statistics collection service throws. |
| expected-stats | Defines the statistic type that the service from other network elements expects. |
| element | Asks for statistics collection from an element. |
| auto-deactivate | Displays the auto-deactivation threshold and history for the network elements. |
| processing stats | Shows the service stats-collection processing statistics. |
| stats | Displays the current service statistics. |
| status | Displays the current service status. |

| Parameter | Description |
|---|---|
| <statistic-definition-name> | User-defined statistic definition |
| <network-element-cluster-name> | User-defined cluster name |
| <network-element-name> | User-specified element name |

# 2.8.43 show service subscriber-management attribute-archiver

Shows attribute archiver details for subscriber management

```
show service subscriber-management attribute-archiver history
show service subscriber-management attribute-archiver status
```

| Attribute | Function |
|---|---|
| history | Shows history details for subscriber management |
| status | Shows the status of the attribute-archiver |

| Output | Description |
|---|---|
| StartTime | If the archiver is currently running, time that it began |
| EndTime | If the archiver is no longer running, time that it ended |
| Attributes | The attributes archived |
| Table | The table archived |
| Bytes | The number of bytes archived |
| Success | Indicates if the archiver was successful |
| FailureReason | If the archiver failed, the reason for the failure. |

# 2.8.44 show service subscriber-management config

Shows the current configuration of subscriber management.

| Output | Description |
|---|---|
| MaximumSubscribers | The maximum number of subscriber records that can be in memory |
| AverageSubscriberNameLength | The average length for a subscriber name |
| MaximumSubscriberBuffer | The maximum amount of buffer space to allocate to subscribers. |
| MaximumIpAssignment | The maximum number of IP assignment record that can be in memory |
| UseIpV6Sizing | Indicates if IPv6 sizing is in use |
| MaximumIpAssignmentBuffer | The maximum amount of buffer space to allocate to IP assignments |
| MaximumAttribute | The maximum amount of buffer space to allocate to subscriber attribute |
| MaximumMajorAttribute | The maximum size for a major attribute |
| MajorAttributeLength | The length of a major attribute |
| MinorAttributeLength | The length of a minor attribute |
| MaximumAttributeBuffer | The maximum buffer size for am attribute |

| Resource Output | Description |
|---|---|
| Resource | The resource the table is showing statistics for |
| Usage (MB) | The amount of memory the resource is using, in mega bytes |
| Usage (Bytes) | The amount of memory the resource is using, in bytes |
| Percentage of Parent | The percentage of the parent resource's memory this resource is using |

# 2.8.45 show service subscriber-management dashboard

This CLI command is available to root users of the SPB who wish to see the subscriber-management dashboard.

```
show service subscriber-management dashboard
```

| IP Mapper Management Output | Description |
|---|---|
| PacketInputRate | The per-second rate at which IP mapping packets are arriving |
| PacketParsingRate | The per-second rate at which IP mapping packets are parsed |
| LoginRate | The per-second login rate |
| LogoutRate | The per-second logout rate |
| CurrentQueueSize | The current size of the IP mapping queue |

| Provisioning Management Output | Description |
|---|---|
| LoginRate | The per-second login rate |
| LogoutRate | The per-second logout rate |
| ErrorRate | The per-second error rate |
| AttributeMapRate | The per-second subscriber attribute set rate |
| SessionAttributeMapRate | The per-second session attribute set rate |
| TotalNatMappingRate | The per-second NAT map rate |
| TotalNatUnMappingRate | The per-second NAT unmap rate |
| CurrentQueueSize | The current size of the provisioning queue |

| Change Notification Management Output | Description |
|---|---|
| LastFlowControlEventTime | The last time that sending of change notifications was flow controlled |
| Failure | The number of send notification failures |
| Retry | The number of send notification retries |
| Success | The number of send notification successes |

| Cache Miss Output | Description |
|---|---|
| Sent | The number of cache miss notifications sent |
| Dropped | The number of cache miss notifications dropped |

| Subscriber Management System Database Output | Description |
|---|---|
| Ipv4AssignmentCount | The number of IPv4 addresses observed |
| Ipv6AssignmentCount | The number of IPv6 addresses observed |

| Subscriber Services Management Output | Description |
|---|---|
| OperationName | The name of the operation |
| TotalRequest | The number of requests received |
| TotalErrors | The number of errors encountered |
| Rate(/s) | The per-second rate for this operation |
| Minimum | The minimum for this message type |
| Maximum | The maximum for this message type |
| Average | The average for this message type |
| Average(50) | The average for the last 50 messages of this type |

# 2.8.46 show service subscriber-management snapshot

Shows the saved SPB snapshots

```
show service subscriber-management snapshot
show service subscriber-management snapshot history
show service subscriber-management snapshot history limit <limit: 0>
```

| Snapshot Output | Description |
|---|---|
| Running | Indicates if the snapshot service is running |
| Snapshotting | Indicates if a snapshot is in progress |
| SnapshotSuccessCount | The number of successful snapshots |
| SnapshotFailedCount | The number of failed snapshots |
| SnapshotNoWorkDoneCount | The number of snapshots where no work was done |
| SnapshotsAttemptedCount | The number of snapshots attempted |
| SecondsUntilNextSnapshot | How long until the next snapshots, in seconds |
| CurrentTransactionLogCount | The number of current transaction logs |

| Snapshot History Output | Description |
|---|---|
| StartTime | When a snapshot was started |
| Duration(secs) | How long the snapshot took |
| TableName | The name of the snapshot table |
| StartTxId | The start of the table index |
| Size(bytes) | The size of the table in bytes |
| Success | Indicates if the snapshot was successful |
| FailureReason | The reason the snapshot failed, if any |

# 2.8.47 show service subscriber-management stats

Shows statistics for subscriber management.

```
show service subscriber-management stats notification
show service subscriber-management stats persistence
show service subscriber-management stats transaction-logs
```

| Notification Output | Description |
|---|---|
| IpAssignmentNotificationsEnabled | Enable/Disable notifications for IpAssignments |
| SubscriberAttributeNotificationsEnabled | Enable/Disable notifications for Subscriber Attributes |
| SessionAttributeNotificationsEnabled | Enable/Disable notifications for Session Attributes |
| StatsResetTime | Start or reset time. For example, 2011-04-07 03:24:33 EDT |
| ConnectionsCreated | Number of connections created |
| AverageSendTime(ms) | Average send time in milliseconds |
| MaximumSendTime(ms) | Maximum send time in milliseconds |
| SendTimeout(secs) | Timeout in seconds |
| SendTimeoutFlowControl(secs) | Number of seconds notifications are retried before giving up when notifications are being flow controlled |
| LastFlowControlEventTime | Last event time for flow control |
| FailureCount | Failure count |
| RetryCount | Retry count |
| SuccessCount | Number of successful notifications sent |
| SuccessCountRate | The rate at which change notifications are being sent |
| NotificationVersions | The version of notifications |
| CompresionMode | The compression mode |
| AvgCompressionTime(ms) | The average time it takes to do compression, in milliseconds |
| MaxCompressionTime(ms) | The maximum time it takes to do compression, in milliseconds |

| Persistance Output | Description |
|---|---|
| SubscriberCount | Number of subscribers |
| AttributeDefinitionCount | Number of attributes defined |
| AttributeAssignmentCount | Number of attributes assigned |
| IpAssignmentCount | Number of IPs assigned |
| SubscriberMaximumCount | Maximum number of subscribers |
| SubscriberDbPercentFull | Percentage of the subscriber database that is full |
| AttributeAssignmentMaximumCount | Maximum number of attributes assigned |
| AttributeAssignmentMaximumMajorByteCount | Maximum number of bytes used by major attribute assignments |

| Persistance Output | Description |
|---|---|
| AttributeAssignmentMajorByteCount | Number of bytes used by major attribute assignments |
| AttributeAssignmentMaximumMinorByteCount | Maximum number of bytes used by minor attribute assignments |
| AttributeAssignmentMinorByteCount | Number of bytes used by major attribute assignments |
| AttributeAssignmentDbPercentFull | Percentage of attribute assignment database that is full |
| IpAssignmentMaximumCount | Maximum number of IP assignments |
| IpAssignmentDbPercentFull | Percentage of IP assignment database that is full |
| TotalMemoryUsage | Total memory used |

| Transaction Log Output | Description |
|---|---|
| ResetTime | Last time the service was reset |
| ActiveSegmentName | Name of the active segment |
| LastTransactionId | The ID of the last transaction |
| NumberOfTransactionsStarted | Number of transactions started |
| NumberOfIndividualOperationsLogged | Number of individual operations logged |
| NumberOfTransactionsCompleted | Number of transactions completed |

## 2.8.48 show service subscriber-management status

Shows status of the subscriber management service.

```
show service subscriber-management status
```

| Output | Description |
|---|---|
| Status | Status of the subscriber management service |
| InitializePercentDone | Percentage of the service that is initialized |
| InMemoryEnabled | Indicates if in-memory mode is enabled |
| MessagesPerSecond | Number of messages per second |
| OperationsPerSecond | Number of operations per second |
| InMemoryDbPercentFull | Percentage of in-memory database that is full |

## 2.8.49 show service subscriber-provisioning

Shows subscriber provisioning services information.

```
show service subscriber-provisioning config
show service subscriber-provisioning detail
show service subscriber-provisioning stats
```

| Attribute | Description |
|---|---|
| config | Current configuration |
| detail | Detailed service information |
| stats | Service statistics |

## 2.8.49.1 show service subscriber-provisioning config

| Provisioning Management Output | Description |
|---|---|
| MaximumRequestQueueSize | The maximum number of received provisioning messages that can be enqueued for processing |
| MaximumBatchQueueSize | The maximum number of provisioning messages that can be enqueued for processing by a particular batch request worker |
| MaximumResponseQueueSize | The maximum number of completed provisioning messages that can be enqueued for reply |
| RequestQueueWorkers | The number of request worker threads receiving provisioning messages from the SDE |
| RequestWorkerPriority | The priority of the request worker threads receiving provisioning messages from the SDE |
| BatchRequestWorkers | The number of batch request worker threads processing queues of parsed provisioning message batches from the SDE |
| BatchRequestWorkerPriority | The priority of the batch request worker threads processing queues of parsed provisioning message batches from the SDE |
| BatchRequestWorkerMaximumLag | The threshold time in milliseconds beyond which message processing is considered to be lagging |
| BatchRequestWorkerTimeout | The maximum time in milliseconds that a batch request worker should wait for a full batch before processing a partial batch |
| BatchRequestWorkerBatchSize | The number of individual requests that constitute a full batch |
| ResponseQueueWorkers | The number of provisioning response worker threads sending replies to the SDE upon completion of provisioning processing |
| ResponseWorkerPriority | The priority of the provisioning response worker threads sending replies to the SDE upon completion of provisioning processing |
| RequestQueueSizeRisingThreshold | The provisioning overload alarm's rising threshold for request queue size |
| RequestQueueSizeFallingThreshold | The provisioning overload alarm's falling threshold for request queue size |
| ResponseQueueSizeRisingThreshold | The provisioning overload alarm's rising threshold for response queue size |
| ResponseQueueSizeFallingThreshold | The provisioning overload alarm's falling threshold for response queue size |
| LagRisingThreshold | The provisioning lag alarm's rising threshold, in seconds |
| LagFallingThreshold | The provisioning lag alarm's falling threshold, in seconds |

| Cache Miss Notification Output | Description |
|---|---|
| CacheMissNotificationEnabled | Whether PTS IP lookup failures trigger notifications to the SDE |

| Cache Miss Notification Output | Description |
|---|---|
| MaxNotificationSize | The maximum number of lookup failures to send to the SDE in a batch |
| MaxNotificationTimeout | The maximum time in milliseconds to wait for a full batch before sending a partial batch |
| MaxQueueSize | The maximum number of cache miss notifications that can be enqueued for sending to the SDE |

## 2.8.49.2 show service subscriber-provisioning detail

| Provisioning Rate Detail Output | Description |
|---|---|
| TotalTransactionRate | The per-second transaction rate including login, logout, subscriber attribute set, session attribute set, NAT map, NAT unmap, and subscriber lookup operations. |
| TotalMessageCount | The number of provisioning messages received and enqueued for processing |
| TotalMessageRate | The per-second messages received rate |
| TotalLookupSubscriberMessageCount | The number of subscriber lookup messages |
| TotalLookupSubscriberMessageRate | The per-second subscriber lookup messages received rate |
| TotalLookupSubscriberCount | The number of subscriber lookup operations |
| TotalLookupSubscriberRate | The per-second subscriber lookup rate |
| TotalLoginCount | The number of login operations |
| TotalLoginRate | The per-second login rate |
| TotalLogoutCount | The number of logout operations |
| TotalLogoutRate | The per-second logout rate |
| TotalSubscriberAttributeMapCount | The number of subscriber attribute set operations |
| TotalSubscriberAttributeMapRate | The per-second subscriber attribute set rate |
| TotalSessionAttributeMapCount | The number of session attribute set operations |
| TotalSessionAttributeMapRate | The per-second session attribute set rate |
| TotalNatMappingCount | The number of NAT map operations |
| TotalNatMappingRate | The per-second NAT map rate |
| TotalNatUnMappingCount | The number of NAT unmap operations |
| TotalNatUnMappingRate | The per-second NAT unmap rate |
| BatchProcessedCount | The number of batches processed |
| BatchProcessedRate | The per-second batches processed rate |
| BatchFailureCount | The number of batch processing failures |
| BatchFailureRate | The per-second batch failure rate |
| TotalErrorCount | The number of provisioning errors |
| TotalErrorRate | The per-second error rate |

### 2.8.49.3 show service subscriber-provisioning stats

| Provisioning Management Output | Description |
|---|---|
| TotalMessageCount | The number of provisioning messages received and enqueued for processing |
| ProvisioningMsgsUnknownFormatCount | The number of messages whose format could not be parsed |
| TotalLookupSubscriberMessageCount | The number of subscriber lookup messages |
| TotalLookupSubscriberCount | The number of subscriber lookup operations |
| TotalLoginCount | The number of login operations |
| TotalLogoutCount | The number of logout operations |
| TotalNatMappingCount | The number of NAT map operations |
| TotalNatUnMappingCount | The number of NAT unmap operations |
| TotalSessionAttributeMapCount | The number of session attribute set operations |
| TotalSubscriberAttributeMapCount | The number of subscriber attribute set operations |
| BatchProcessedCount | The number of batches processed |
| BatchFailureCount | The number of batch processing failures |
| BatchesWithAssignIpsRequests | The number of batches that contained IP assignment operations |
| BatchesWithUnassignIpsRequests | The number of batches that contained IP unassignment operations |
| BatchesWithNatMapRequests | The number of batches that contained NAT map operations |
| BatchesWithNatUnmapRequests | The number of batches that contained NAT unmap operations |
| BatchesWithSetSessionAttributeRequests | The number of batches that contained set session attribute operations |
| BatchesWithSetSubAttributesRequests | The number of batches that contained set subscriber attribute operations |
| TotalIpv4Count | The number of IPv4 addresses observed in logins and logouts |
| TotalIpv4SiteCount | The number of IPv4 addresses with site observed in logins and logouts |
| TotalIpv6Count | The number of IPv6 addresses observed in logins and logouts |
| CurrentLag | The current lag, in milliseconds |
| HighestLag | The maximum observed lag, in milliseconds |
| HighestLagTime | The time at which  the maximum lag time was observed |
| CurrentQueueSize | The current queue size |
| HighestQueueSize | The highest observed queue size |
| HighestQueueSizeTime | The time at which the highest queue size was observed |
| CurrentResponseQueueSize | Number of messages in the response queue waiting for responses to be sent |
| SubscriberServicesRetryCount | The number of retries of calls to Subscriber Services |
| TotalErrorCount | The number of provisioning errors |
| CurrentSmsRetryInterval | The time in milliseconds to wait before retrying a failed batch |
| DiscardedProvisioningMessagesCount | The number of discarded provisioning messages |

| Provisioning Management Output | Description |
|---|---|
| RefusedMsgsCount | The number of messages that were refused due to a full provisioning queue |
| ProvisioningMessagesDroppedByBatchQueue | The number of provisioning messages dropped by a batch queue worker due to a full queue |
| UnexpectedMessagesIdCount | The number of message IDs passed to the response queue that were not marked as being in progress |
| ResponsesEnqueuedCount | The number of completed provisioning messages that were enqueued |
| ResponsesDroppedCount | The number of completed provisioning messages that had to be dropped |
| ResponsesSent | The number of responses sent back to the SDE |
| ResponseSendFailures | The number of failed attempts to send responses back to the SDE |

| Cache Miss Notification Output | Description |
|---|---|
| CurrentQueueSize | The current size of the cache miss queue |
| TotalCacheMissesSent | Number of individual cache miss notifications sent |
| NotificationsSent | Number of notification batches sent |
| NotificationsTriggeredByTime | Number of notification batches triggered by time |
| NotificationsTriggeredBySize | Number of notification batches triggered by size |
| TotalCacheMissesDropped | Total number of dropped cache misses |

# 2.8.50 show service top-talker

Identifies and quantifies subscribers who use the most bandwidth.

```
show service top-talker config
show service top-talker history
show service top-talker status
```

| Attribute | Description |
|---|---|
| config | Current configured SandScript |
| history | Recent Top Talkers |
| status | Service status |

| Config Output | Description |
|---|---|
| Enabled | Indicates if top-talkers service has been enabled |
| PolicyConfigurationFile | The path to SandScript's policy.conf file. |
| TTSTransactionTimeout (ms) | The timeout for a top-talkers transaction, in milliseconds |
| NextExecutionTime | The next time the SandScript will be executed |

| History Output | Description |
|---|---|
| StartTime | The start time for top-talkers |
| EndTime | The end time for top-talkers |
| ExecutionResult | The result of running top-talkers |

| Status Output | Description |
|---|---|
| Initialized | Indicates if top-talker service has been initialized. |
| InitializationErrorString | The initialization error string, if any. |

## 2.8.51 show service truncollator status

Displays the current status of the truncollator service.

| Output | Description |
|---|---|
| Database | The name of the database that the truncollator process is running against |
| Enabled | Whether or not the truncollator process is enabled |
| Scheduled | Whether or not the truncollator process has been scheduled to run |
| LastRunTime | The last time that the truncollator process ran |

**Example:**

```
SRP> show service truncollator status

TRUNCOLLATOR STATUS
===================

Database   : sv_stat
Enabled    : true
Scheduled  : true
LastRunTime: 2011-12-08 12:52:40 EST

LAST RUN SUMMARY
================

Validating default configuration file
/usr/local/sandvine/etc/dataRetention.conf.default
Validating configuration file /usr/local/sandvine/etc/dataRetention.conf
Doing truncation/allocation of partitions on database: sv_stat
Truncated and re-allocated 1 partitions for table dns_domain_raw.
Truncated and re-allocated 1 partitions for table dns_mt_dist_raw.
Truncated and re-allocated 1 partitions for table dns_stats_raw.
Truncated and re-allocated 1 partitions for table dns_sub_stats_raw.
Truncation/allocation of database: sv_stat complete.
```

# 2.8.52 show-service-warm-standby-status

Checks the status of the warm standby system.

Run the `show-service-warm-standby-status` CLI command on the primary server to display the archive process status.

For example:

```
PRIMARY DATABASE
================

LastArchivedFile   : 000000010000000000000028
FileModifyTime     : 2013-08-09 08:51:17 EDT
ArchiveStartTime   : 2013-08-09 08:51:17 EDT
ArchiveCompleteTime: 2013-08-09 08:51:20 EDT
TimeNow            : 2013-08-09 08:51:50 EDT

ARCHIVE LAG TIMES
=================

FileCompleteToArchiveStart   :  0 seconds
ArchiveStartToArchiveComplete:  3 seconds
LastArchiveComplete          :  30 seconds ago

Standby server has all data up to 33 seconds ago.

On the standby server, the command show the status of the restore process.
SPC> show service warm-standby status

STANDBY DATABASE
================

LastRestoredFile   : 000000010000000000000026
FileModifyTime     : 2013-08-09 08:49:17 EDT
RestoreStartTime   : 2013-08-09 08:49:18 EDT
RestoreCompleteTime: 2013-08-09 08:49:18 EDT
TimeNow            : 2013-08-09 08:49:24 EDT

LAG TIMES
=========

FileCompleteToRestoreStart   :  1 seconds
ArchiveStartToRestoreComplete:  0 seconds
LastRestoreComplete          :  6 seconds ago

Standby server lags primary server by 7 seconds.
```

# 2.8.53 show service web-services stats

Displays a count of unsuccessful logins for SPB WebService API.

```
show service web-services stats
```

| Output | Description |
|---|---|
| FaultyLoginCount | Number of faulty logins |

# 2.8.54 show subscriber attribute audit subscriber-name

Shows various statistics and results on subscriber attributes audited by subscriber name and additional user specified attributes and parameters.

```
show subscriber attribute audit subscriber-name <subscriber-name>
show subscriber attribute audit subscriber-name <subscriber-name> attribute-name <attribute-name>
show subscriber attribute audit subscriber-name <subscriber-name> attribute-name <attribute-name>
 date <YYYY-MM-DD>
show subscriber attribute audit subscriber-name <subscriber-name> attribute-name <attribute-name>
 date <YYYY-MM-DD> limit <rows>
show subscriber attribute audit subscriber-name <subscriber-name> attribute-name <attribute-name>
 limit <rows>
show subscriber attribute audit subscriber-name <subscriber-name> date <YYYY-MM-DD>
show subscriber attribute audit subscriber-name <subscriber-name> date <YYYY-MM-DD> limit <rows>
show subscriber attribute audit subscriber-name <subscriber-name> limit <rows>
```

| Attribute | Function |
|---|---|
| attribute-name | Specify an attribute |
| date | Specify a date |
| limit | Specify a limit |

| Parameters | Description |
|---|---|
| <attribute-name> | User-specified attribute |
| <YYYY-MM-DD> | User-specified date |
| <rows> | User-defined limit |

# 2.8.55 show subscriber attribute-definitions

Shows subscriber attribute definitions.

| Output | Description |
|---|---|
| Name | Subscriber name |
| Audited | Whether the changes in value of this attribute is tracked |
| Reported | Whether or not this attribute is archived and reported on |
| Visible | Whether or not this attribute is visible |
| Notifiable | Whether or not change notifications are sent for this attribute. |
| IpNotifiable | Whether or not change notifications are sent for this IP |

# 2.8.56 show subscriber ip

Shows details about a subscriber by IP address:

```
show subscriber ip <ip-address>
```

Shows the list of IP assignments for the specified IP address. IP assignments are returned regardless of the session qualifier, including the default session qualifier.

```
show subscriber ip <ip-address> site
```

Shows the subscriber IP assignment information. If the IP address has a session qualifier, then this command shows the session qualifier.

```
show subscriber ip <ip-address> site <site-value:0..>
```

Shows a subscriber with the IP address identified by the session identifier:

```
show subscriber ip session-identifier <session-identifier>
```

| Parameter | Description |
|---|---|
| <ip-address> | Filter by subscriber IP |
| <site-value:0..> | Filter by site number<br>**Note:**<br><site-value> is a positive 32-bit integer. |
| <session-identifier> | Filter by session identifier<br>**Note:**<br><session-identifier> value ranges from 0 to 9223372036854775807. |

| Output | Description |
|---|---|
| Name | Subscriber name |
| Realm | Subscriber realm |
| Status | Status - active or inactive |
| IpAddress | IP address of the subscriber |
| Site | Site number used to qualify the IP address<br>**Note:**<br>This output field is displayed only if a session qualifier is defined for the IP address. |
| Assigned | Timestamp for the subscriber address assignment |
| SessionId | Session Identifier of the IP assignment. |
| **Subscriber and Session Attributes** | |
| Name | Name of the attribute |
| Value | Value of the attribute |
| EffectiveTime | Effective time of the attribute assignment |
| ExpiryTime | Expiry time of the attribute assignment |

# 2.8.57 show subscriber name

Shows the current IP assignments and NAT mappings for a subscriber name.

```
show subscriber name <subscriber-name>
show subscriber name <subscriber-name> ip-history
show subscriber name <subscriber-name> ip-history limit <limit:0..>
show subscriber name <subscriber-name> ip-history date <yyyy-mm-dd>
```

| Parameter | Description |
|---|---|
| <subscriber-name> | User-defined subscriber name. |
| <yyyy-mm-dd> | Date in the format yyyy-mm-dd. |

**Note:**

- If an IP address has a session qualifier, the command output displays it, otherwise the Site output field is not displayed.
- If the subscriber attributes include unprintable Unicode characters, the CLI command `show subscriber name <subscriber-name>` displays a message similar to this:

  ```
  Lookup for Subscriber $subName successful. Unprintable Unicode characters found in subscriber information. Please use alternate way like web-services.
  ```

  Unprintable Unicode characters include: 0x00, 0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08, 0x0B, 0x0C, 0x0E, 0x0F, 0x10, 0x11, 0x12, 0x13, 0x14, 0x15, 0x16, 0x17, 0x18, 0x19, 0x1A, 0x1B, 0x1C, 0x1D, 0x1E, 0x1F

**Example:**

```
SRPSDE> show subscriber name Joe

SUBSCRIBER INFORMATION
======================
Name : Joe
Realm : DEFAULT
Status: Active

IP ASSIGNMENTS
==============
IpAddress Site Assigned                  SessionId
--------- ---- ----------------------  -------------
1.0.0.1    101 2011-07-11 15:06:14 EDT  4301802519664

NAT MAPPINGS
============
IpAddress Site PublicIpAddress LowPort HighPort
--------- ---- --------------- ------- --------
1.0.0.1    101         2.2.2.2     128      255

SUBSCRIBER ATTRIBUTES
=====================
Name Value EffectiveTime           ExpiryTime
---- ----- ----------------------- ----------
Tier Gold  2011-07-11 15:07:16 EDT N/A
```

# 2.8.58 show subscriber public-ip-address

Checks the NAT mappings for the specified public IP address and port number. If the NAT mapping exists, the command displays the corresponding subscriber assigned to the private IP address specified in the NAT mapping.

```
show subscriber public-ip-address <ipv4-address> port <int:0..65535>
```

| Attribute | Function |
|---|---|
| public-ip-address | A globally routable unicast IP address. |
| port | The port number associated with the NAT mapping. |

| Parameters | Description |
|---|---|
| ipv4-address | An IPv4 address (not a qualified IP). |
| int:0..65535 | A port number in the range 0 to 65535. |

| Output | Description |
|---|---|
| Name | Name of the subscriber. |
| Realm | Realm of the subscriber. |
| Status | Status - active or inactive. |
| IpAddress | IP address of the subscriber. |
| Site | Site number used to qualify the IP address.<br>**Note:**<br>This output field is displayed only if a session qualifier is defined for the IP address. |
| Assigned | Timestamp at which the IP address was assigned to the subscriber. |
| SessionId | Session Identifier of the IP assignment. |

# 2.8.59 show system accounting

This command is used for remote accounting using TACACS+

```
show system accounting
```

| Output | Description |
|---|---|
| Name | Protocol that is used for accounting. |
| Enabled | Specifies whether accounting is enabled or disabled.<br>**Note:** When accounting is not configured, it is disabled. |
| Queued | Number of packets queued. |
| QueuePercentFull | Queued records percentage calculated based on the “queue size”configured at accounting configuration. |
| Sent | Number of accounting records sent. |
| Errors | Accounting errors caused due to server unavailability or any TACACS+ server error. |
| Dropped | Number of Dropped records once the configured queue limit exceeds. |

# 2.8.60 show system environmental

Shows the environmentally monitored devices in the system.

| Fan Output | Description |
|---|---|
| Description | A description of the fan. |
| Value | The fan speed in revolutions per minute (RPM). |

| Temperature Output | Description |
|---|---|
| Description | Description of the machine component. |
| Value | Value of the sensor, as measured in Celsius. |
| Status | Status of the temperature alarm. |

| Power Supplies Output | Description |
|---|---|
| Description | Description of the power supply. |
| Value | Value of the device, which could be its status, voltage, current or temperature. |

| Voltage Output | Description |
|---|---|
| Description | Description of the machine component. |
| Value | Value of the device, as measured in volts. |

| Current Output | Description |
|---|---|
| Description | Description of the machine component. |
| Value | Value of the device, as measured in amps. |

# 2.8.61 show system environmental fans

Shows information from the fan sensors.

| Fan Output | Description |
|---|---|
| Description | A description of the fan. |
| Value | The fan speed in revolutions per minute (RPM). |

# 2.8.62 show system environmental power

Shows devices with power supplies or a specific power supply.

```
show system environmental power
```

| Power Output | Description |
|---|---|
| Description | Description of the machine component |
| Value | Value of the sensor or device, as measured in its scale. For example, Celsius for temperature, or mA for current. |

# 2.8.63 show system environmental temperature

Shows all monitored temperatures and statuses in the system. Typically, this includes disks, power supplies, and CPUs.

CPU temperatures are reported for both the PTS and the SPB. In addition to the CPU temperature, there is a CPU thermal warning counter for each module. The CPU thermal warning counter is incremented on a per-minute basis whenever the CPU is in thermal throttling mode due to high temperature.

Power supplies have multiple temperature sensors. One sensor reports a temperature measurement while the other sensors generate temperature alarms. As a result, it is possible for temperature alarms to trigger on a particular temperature threshold, without the temperature measurement reading values that exceed that same threshold. This does not indicate a malfunctioning temperature alarm.

Temperature alarm thresholds vary depending on the particular device and power supply model.

```
show system environmental temperature
```

| Temperature Output | Description |
|---|---|
| Description | Description of the machine component. |
| Value | Value of the sensor, as measured in Celsius. |
| Status | Status of the temperature alarm. |

# 2.8.64 show system environmental voltage

Shows all monitored voltages in the system.

| Voltage Output | Description |
|---|---|
| Description | Description of the machine component. |
| Value | Value of the device, as measured in volts. |

# 2.8.65 show system hardware

Shows all hardware installed in the system.

| Output | Description |
|---|---|
| Id | Hardware component ID |
| Description | Description of the hardware |
| SerialNum | Serial number of the hardware |
| ModelName | Model name of the hardware |

## 2.8.66 show system hardware machine-check

Displays hardware errors by severity.

```
show system hardware machine-check
show system hardware machine-check controller
show system hardware machine-check module <id:1..10>
```

| Parameter | Description |
|---|---|
| ID | The ID of the module to show |

| Output | Description |
|---|---|
| Description | Name of the hardware |
| Correctable | Number of correctable errors |
| Uncorrectable | Number of uncorrectable errors |
| Fatal | Number of fatal errors |

## 2.8.67 show log cli

Shows the audit log for every CLI command run on the element. Use this information to track configuration changes.

```
show log cli
```

Logged information includes:

- Date
- Start and end time
- Element on which the command was run
- User that ran the command
- Group that the user belongs to
- The command that was run
- Session ID for commands run from the CLI

Use the `monitor log cli` CLI command to monitor the CLI audit logs.

## 2.8.68 show system history enable

Show the history of the command sv_enable, including permission changes.

| Output | Description |
|---|---|
| Date | Date of the change |
| User | The user that made the change |
| OldPrivileges | The old privilege |
| NewPrivileges | The new privilege |

# 2.8.69 show system history login

Shows the history of SSH logins.

| Output | Description |
|---|---|
| Date | Date and time of the login |
| User | The User who logged in |
| Ip | The connecting IP |
| Port | The connecting port |
| Authentication | The authentication method. |

# 2.8.70 show system history reload

Shows when the svreload command was run, the result and what configuration files were modified.

| Output | Description |
|---|---|
| Date | Date and time svreload was run |
| PolicyModified | Indicates if SandScript configuration was modified |
| SubnetsModified | Indicates if subnets configuration was modified |
| RcModified | Indicates if system configuration was modified |
| Result | Indicates if the reload was a success |

# 2.8.71 show system indicators

Shows the state of the physical indicators (LEDs) on the system.

**Indicator devices**

Via SNMP, the INDICATOR DEVICE MIB shows the status of all indicator LEDs on the system — power, online, fault, and alarm. A table is provided for each of the LEDs and their current state. Depending upon the indicator, the possible states are: off, green or red.

The power LED will always be green in a stable power condition.

The online LED should be green. If the online LED is off, services are not running properly. Execute the show system services command to see the operational status of the services running on the element.

On the PTS 8210, the fault LED is used to indicate an over temperature condition. Off indicates normal operation. Red indicates an over temperature fault. When an over temperature condition is detected, the CPU shuts down. The fault LED is not used on any other platform.

The alarm LED should be off. This alarm is red if any alarm of severity minor or greater is currently present in the alarmActive table. It is automatically cleared if the alarm is cleared. This indicator is controlled by the alarm MIB device. If the alarm LED is on, reference the MIB to determine what generated the alarm.

| Output | Description |
|---|---|
| Id | Indicator ID |
| Type | Type of indicator |
| State | Indicator state |

# 2.8.72 show system information

Shows basic information about the system.

```
  Hostname        : TPC-G18-35.phaedrus.sandvine.com
                      Model           : PTS24100-A
                      SerialNumber    : SDVN86010771
                      ControlMAC      : 00:09:35:1e:10:00
                      ControlIP       : 10.135.18.166/30
                      InternalServiceIP : 5.0.0.1/24
                      ExternalServiceIP : 4.0.0.1/24
                      CurrentTime     : 2013-09-20 09:58:47 EDT
                      Uptime          : 2 hours, 13 minutes
                      LastReboot      : 2013-09-20 07:45:59 EDT
                      LastUpdate      :
```

| Output | Description |
|---|---|
| Hostname | The hostname for the element. |
| Model | The Sandvine model number. |
| Serial Number | The element's serial number. |
| ControlMac | MAC address for the control interface. |
| ControlIP | The IP for the control interface. |
| ExternalServiceIP | The IP address used to connect to devices over the service interface(s). |
| InternalServiceIP | The IP address used to connect to other elements in the cluster and for internal service communication. |
| CurrentTime | The current time. |
| Uptime | How long the system has been running. |
| LastReboot | The date and time the element was last rebooted. |
| LastUpdate | The date and time the element was last updated. |

# 2.8.73 show system licenses

Shows all the licenses used by the system. If a license ID is provided, shows all the features currently included in that license.

```
show system licenses
show system licenses <id:0..>
```

| Output | Description |
|---|---|
| Name | Identifies the feature.<br>Describes the state of the license. |
| State | Describes the state of the license. |
| ExpirationDate | Identifies the date that the license is set to expiration. |

| Output | Description |
|---|---|
| Id | The ID of the feature. |
| Name | Identifies the feature. |
| State | Identifies the date that the license is set to expiration. |
| Major | |
| Minor | |
| Start Date | The date this licence was started. |
| ExpirationDate | Identifies the date that the license is set to expiration. |
| Days to Expiry | Identifies the time, in days, remaining before this licence will expire. |

# 2.8.74 show system log

Shows the log file of all significant events or issues detected by the system.

```
show system log
```

```
show system log limit <int:0..>
```

Use the limit option to explicitly limit the output of this command to the specified number of events.

**Note:**
Sandvine recommends that, when deciding on a log limit entry, you keep in mind that the higher the limit you select, the longer it will take to generate the information and display it. This is especially true when running the CLI command remotely. Also, if you enter a zero (0) for the log limit, the command will generate a complete dump of log messages and this could require a significant amount of time to display.

| Output | Description |
|---|---|
| LogId | A unique ID for each log message. |
| EventDate | The date and time at which the event occurred. |
| Component | The part of the system that detected and reported the event. |
| Severity | Can be one of:<br>• info<br>• notice<br>• warning<br>• error<br>• critical |

| Output | Description |
|---|---|
| | • alert<br>• emergency |
| Message | The nature of the event or issue reported. |

## 2.8.75 show system log subscriber-management

Shows the system log for subscriber management.

**Example:**

```
2011-06-08 00:26:52,353 INFO  [SvSms:Initializer-1] - Main Initialize; count = 1
2011-06-08 00:26:52,353 INFO  [SvSms:Initializer-1] - Waiting for masterelection ...
2011-06-08 00:47:56,602 INFO  [SvSms:Initializer-1] - Reloading config
2011-06-08 00:47:56,603 INFO  [SvSms:Initializer-1] - Clear in-memory database
2011-06-08 00:47:56,603 INFO  [SvSms:Initializer-1] - Load initial state fromdatabase
```

## 2.8.76 show system overview

Shows an overview of what the SPB is doing.

| IP Mapper | Description |
|---|---|
| PacketInputRate | The rate at which packets are being received by the SPB |
| PacketParsingRate | The rate at which the SPB is parsing packets |
| LoginRate | The rate at which the SPB is processing login messages |
| LogoutRate | The rate at which the SPB is processing logout messages |
| AttributeMapRate | The rate at which subscriber attributes are being mapped |
| SessAttributeMapRate | The rate at which session attributes are being mapped |
| MaximumQueueSize | The maxium number of packets which will fit in the queue |

| Provisioning | Description |
|---|---|
| LoginRate | The rate at which the SPB is processing login messages |
| LogoutRate | The rate at which the SPB is processing logout messages |
| ErrorRate | The rate at which processing errors are occurring |
| SessionAttributeMapRate | The rate at which sessions attributes are being mapped |

| Change Notification | Description |
|---|---|
| LastFlowControlEventTime | The last time that a flow control event occurred |
| Failure | The total number of change notification failures which have occurred |
| Retry | The total number of change notification retry attempts which have occurred |

| Change Notification | Description |
|---|---|
| Success | The total number of successful change notification message which have been sent |

| Cache Miss | Description |
|---|---|
| Sent | The total number of cache miss notifications which have been sent |
| Dropped | The total number of cache miss notifications where have been dropped due to a queue overflow |

| Subscriber Management System Database | Description |
|---|---|
| SubscriberCount | The total number of subscribers currently present in the SMS database |
| Ipv4AssignmentCount | The total number of IPV4 addresses currently present in the SMS database |
| Ipv6AssignmentCount | The total number of IPV6 addresses currently present in the SMS database |
| AttributeAssignmentCount | The total number of subscriber attribute assignments present in the SMS database |
| SessionAttributeCount | The total number of session attribute assignments present in the SMS database |
| MessagesPerSecond | The number of messages per second being processed by the Subscriber Management System |
| OperationsPerSecond | The number of operations per second being performed by the Subscriber Management system |
| InMemoryDbPercentFull | The percentage of the SMS database currently being used |

| System Resources | Description |
|---|---|
| Cpu | The CPU being referenced |
| User | The percentage of CPU currently in use by user operations |
| System | The percentage of CPU currently in use by system operations |
| Idle | The percentage of CPU which is not currently in use |

| Memory | Description |
|---|---|
| Memory | A description of the available system memory |
| Swap | A break down of the system SWAP space |
| LoadAverages | The load averages of the system memory |

| Disk Capacity | Description |
|---|---|
| Filesystem | The file system path |
| Size | The total size of the file system |
| Used | The amount of disk space which is currently in use |
| Avail | The amount of disk space which is currently available |
| Capacity | The disk space in use expressed as a percentage |
| MountedOn | The partition the file system is mounted on |

| Table Groups | Description |
|---|---|
| TableGroup | The name of the database table group |
| TableGroupSize(MB) | The amount of disk space being used by the table group |
| RowCount | The current row count for the table group |

| Table Growth | Description |
|---|---|
| Date | The date on which the measurements were taken |
| Size(GB) | The total size of the database |
| Growth(GB) | The growth of the database on this date |

# 2.8.77 show system processes

Shows system processes running on the controller for all modules.

```
show system processes
show system processes module <module-id>
show system processes controller
```

| Output | Description |
|---|---|
| User | Process user. For example, pgsql. |
| PID | Process ID. |
| %Cpu | Percentage of CPU the process is using at the time the command is run. |
| %Mem | Percentage of the total system memory the process is using. |
| Vsz | Total virtual memory used by the process. |
| Rss | Total resident memory used by the process. |
| Tt | Tty associated with the process. |
| Stat | Current state of the process. |
| Started | Date the process started. |
| Time | Total CPU time used by the process over its lifetime. |
| Command | Process name. |

# 2.8.78 show system resources

Shows a list of system resources for the system for a specific resource ID. System resources include hard disk space, memory, and other resources that, if exhausted, will impact the proper functioning of the system.

```
show system resources
show system resources <id:1..>
```

This table lists the resouces and their descriptions

| Output | Description |
|---|---|
| Id | Resource or module ID. |
| Description | Description of the resource. |
| Instances | This is the total number (or instances) of this type of resources in the system. |
| Min | Across all of the instances in the system, this is the value of the one with the lowest utilization. |
| Max | Across all of the instances in the system, this is the value of the one with the highest utilization. |
| Avg | This is the average utilization across all of the instances in the system. |
| AllocationFailures | Number of allocation failures. |
| Swap space | The sum total of swap space on every module. |
| Mbuf clusters | The total space of mbuf cluster available on each module. |
| Filesystem / | Disk space on / directory for the SPB. |
| Filesystem /d2 | Disk space on /d2 directory for the SPB. |
| File descriptors | The total number of File descriptors present across all the modules. |
| Kernel memory | The sum of memory being used by the freebsd kernel on each module. |
| Total memory | The sume of real memory and swap size. |
| Process memory | The total amount of memory available to software processes on each module. |
| Process CPU (Hertz) | The total amount of time of CPU used by each process on each module. |
| Processor CPU (Hertz) | The total amount of time the processor on each module executed the process code. |
| JVM memory | Runtime memory usage. |
| HTTP threads | Number of HTTP threads in use. |
| HTTPS threads | Number of HTTPS threads in use. |

**MIB reference**

Data displayed as part of this command is from the hrStorageTable in the HOST-RESOURCES-MIB.

Data displayed as part of this command is from the svSpbAppResourceTable in the SANDVINE-SPB-APP-MIB.

**SNMP notifications**

These SNMP notifications occur when a module has gone down or returns to operational status:

- svSystemResourceLowNotification
- svSystemResourceOkNotification.

For more information, see Alarm Model 7.

**Related alarms**

Alarm Model 7: Resource usage exceeds recommendations

Alarm Model 35: Resource allocation failures

# 2.8.79 show system services

Shows services provided by the system, along with their operational status, uptime, and other data.

| Output | Description |
|---|---|
| Name | System service name. |
| AdminStatus | Administrative status - up or down |
| OperStatus | Operational status:<br>• online — the service is functioning correctly<br>• degraded — some parts of the service is not functioning<br>• stopped — the service has been stopped, or has not started<br>• faulted — the service has experienced a fault<br>• reloading — the service is reloading<br>• starting — the service has just started<br>• initializing — the service is initializing<br>• disabled — the service has been administratively disabled<br>• unlicensed — the service is not licensed and will not run.<br>• diagnostic — the service is providing special functionality to validate the integrity of the software and/or hardware. |
| AdminStarts | Number of administrative starts of the service since it was initialized |
| AdminStops | Number of administrative stops of the service since it was initialized |
| Faults | Number of faults the service has had since initialization |
| LastFaultTime | Time and date of the last service fault |
| LastOnlineTime | Last time and date the service was online |
| LastReloadTime | Last time and date the service was reloaded |

# 2.8.80 show system services last-reload

Shows information for monitored system services.

```
show system services last-reload
```

| Output | Description |
|---|---|
| LastReloadTime | Date and time of the last service reload |
| LastReloadSuccessful | Whether the last reload of the service was successful |
| Id | ID of the reload error |
| Description | Description of the reload error |
| ErrorSeverity | Severity of the reload error |
| TrapEnabled | Whether the trap for the reload error is enabled (true) or disabled (false) |

| Output | Description |
|---|---|
| InError | Whether the reload error occurred during the last reload |

# 2.8.81 show system storage container

Shows information about storage containers.

```
show system storage container
```

| Controller Output | Description |
|---|---|
| Id | Controller ID |
| DeviceName | Device name as recognized by the OS, for example, /dev/aac0 |
| Vendor | Vendor name |
| Description | A description of the device. For example, AAC-RAID RAID Controller. |
| IsRaid | Device is RAID - true or false |
| BatteryState | State of battery |
| Controllers found | Number of controllers found |
| Logical Device Output | Description |
| Logical device number | Logical device number |
| Logical device name | Name of the logical device. For example, OS. |
| RAID level | RAID level |
| Status of logical device | Status |
| Size | Size |
| Read-cache mode | Controller is set to read cache mode - enabled or disabled |
| Write-cache mode | Controller is set to write cache mode - enabled or disabled |
| Write-cache setting | Controller is set to write cache setting - enabled or disabled |
| Partitioned | Logical device is partitioned - yes or no |
| Protected by Hot-Spare | Logical device is protected by a hot spare - yes or no |
| Bootable | Logical device is bootable - yes or no |
| Failed stripes | Device is set to failed stripes, - yes or no |
| Power setting options | Power setting - enabled or disabled |
| Segment [#] | Whether delimited segment is present or not |

| Controller Output | Description |
|---|---|
| Logical device number | Logical device number |
| Logical device name | Name of the logical device. For example, OS. |
| RAID level | RAID level |

| Controller Output | Description |
|---|---|
| Status of logical device | Status |
| Size | Size |
| Read-cache mode | Controller is set to read cache mode - enabled or disabled |
| Write-cache mode | Controller is set to write cache mode - enabled or disabled |
| Write-cache setting | Controller is set to write cache setting - enabled or disabled |
| Partitioned | Logical device is partitioned - yes or no |
| Protected by Hot-Spare | Logical device is protected by a hot spare - yes or no |
| Bootable | Logical device is bootable - yes or no |
| Failed stripes | Device is set to failed stripes, - yes or no |
| Power setting options | Power setting - enabled or disabled |

## 2.8.82 show system storage controller

Shows information about storage controllers.

```
show storage controller
show storage controller <id:0..>
```

| Controller Output | Description |
|---|---|
| Id | Controller ID. |
| DeviceName | Device name as recognized by the OS, for example, /dev/aac0. |
| Vendor | Vendor name. |
| Description | A description of the device. For example, AAC-RAID RAID Controller. |
| IsRaid | Device is RAID - true or false. |
| BatteryState | State of battery. |
| Firmware | The version of firmware running on the storage controller. |

## 2.8.83 show system storage disk

Shows information about storage disk.

```
show system storage disk
show system storage disk <id:0..>
```

| Output | Description |
|---|---|
| ID | The ID number of the device. |
| DeviceName | The name of the device. |

| Output | Description |
|---|---|
| PassDeviceName | The pass name of the device. |
| Vendor | The vendor's name. |
| Model | The device's model number. |
| Description | A description of the device. |
| SerialNumber | The device's serial number. |
| Revision | The revision number of this device. |
| Slot | The slot the device is installed in. |
| BusSpeed | The speed of the interface used to communicate with the disk, in MHz. |
| WriteCache | Indicates whether the disk's write cache is enabled (on) or disabled (off). |
| StopCount | Number of times the disk has gone idle and stopped spinning since powered on. |
| MaxStopCount | Maximum value that StopCount has ever reached. |
| GrowthDefects | The number of growth defects on the device. For platforms with solid state disk drives, growth defects are expected over time. You can analyze UncorrectableReadErrors, UncorrectableWriteErrors, and PercentageLifetimeUsed to determine the health of an SSD disk. |
| UncorrectableReadErrors | The number of read errors on the device. |
| UncorrectableWriteErrors | The number of write errors on the device |
| SmartStatus | Pass if S.M.A.R.T. data indicates that the drive is in working order, fail if S.M.A.R.T. indicates that a disk failure may be imminent. |
| MRIE | Method of Reporting Interval Exceptions (MRIE) mode that the drive has been configured to use. |
| Size | The size of the disk. |
| Bus | Identifies the SCSI bus to which this disk is attached. |
| Target | Identifies the SCSI target to which the disk is attached. |
| HasTasks | Indicates whether the drive is busy or not. |
| Timestamp | Last time that data was gathered for this disk. |
| Status | Current status of the disk (faulted or online). |
| PercentageLifetimeUsed | This field is only applicable for solid state disk drives. For non-SSDs, this value is always 0 and you can ignore it.<br>For platforms with SSDs, this field represents the percentage of the number of write cycles (0-100) used up on the disk. The solid state drives (SSD) in the PTS 22000 can only be written to a fixed number of times before the disk will begin to fail. |
| PowerOnHours | Cumulative number of hours that this drive has been powered on. |

## 2.8.84 show system version

Shows high level version information for the system including installed Sandvine products. If detail is requested, it also includes a list of software packages installed. If protocols is requested, it also includes currently running versions of protocol libraries.

```
show system version
show system version detail
show system version protocols
```

| Output | Description |
|---|---|
| Product | Product name |
| Version | Product version |

| Output | Description |
|---|---|
| Software Package | The installed software package |
| Version | Software package version |

| Output | Description |
|---|---|
| LibContents | The names of the protocols in this library. |
| LibName | The filename of the library loaded for these protocols. |
| Build | The build version of this library. |
| BuildDate | The date on which this library was built. |
| MinorVersion | Protocol version number |
| MajorVersion | The major protocol pack version to which this library belongs. |

## 2.8.85 show usage-management quota-manager config

This command provides information about the Quota Manager configuration.

```
show usage-manangement quota-manager config
```

| Attributes | Description |
|---|---|
| PlanEnabled | Enables the Network Demographics per-plan report. |
| PlanAttribute | Configures the SPB subscriber attribute name for the subscriber plan. Default is "Plan". If all quotas have the same plan attribute name, it also can be something like "MonthlyQuota=Plan1 RoamingQuota=Plan2". |
| Thresholds | The Network Demographics report threshold in format "10 20 100". |
| TotalBytesOnly | Disables the under-quota and over-quota usage reports and enables only the total usage report. |
| UsageRecordsEnabled | Enables usage detail record generation on the SPB. |
| Duration | The duration for the report: either "1 day" or "1 hour". |

| Attributes | Description |
|---|---|
| LocalDirectory | Local directory to store the usage records in. |
| FtpEnabled | Enable FTP transfer for usage detail record. |
| FtpHost | Hostname for usage detail record external FTP server. |
| FtpPort | Port for usage detail record external FTP server, default is 21. |
| FtpUser | Username for usage detail record external FTP server. |
| FtpPassword | Password for usage detail record external FTP server. |
| FtpRemoteDir | Usage detail record storage directory on external FTP server. |
| NumOfFilesToKeep | The number of usage record files to be kept on disk. Upon reaching that number, the oldest one will be removed when a new file is created. |
| ReserveEnabled | Shows if reservation-related reports are enabled. |

## 2.8.86 show user

This command lists local or remote user(s) who were created due to local or remote authentication. You can also specify a name to view details of a specific user.

```
show user
```

```
show user <name>
```

| Output | Description |
|---|---|
| Name | The user’s name. |
| Group | The user’s privilege level. |
| Type | The type of user account (local or remote to indicate if they were created locally or due to remote authentication). |
| DefaultShell | The user’s default shell, either “bash” or “cli”. |
| LastLogin | The last time the user logged in to the system. |

# 3

# SPB CLI Configuration Commands

# 3.1 SPB CLI Configuration Commands

## 3.1.1 Required CLI Configuration Commands

These CLI commands must be configured on each SPB server.

### 3.1.1.1 set config default-user enabled

Enables or disables the default SPB user.

```
set config default-user enabled <true|false>
```

In order for the Application Server to connect to the Message Server the default SPB user needs to be created.

### 3.1.1.2 set config cluster

Configure the cluster compatibility version in a PTS contributing to cluster.

**Warning:**
Commiting the `set config cluster compatibility version` command requires SFCD restart.

```
set config cluster compatibility version <1|2>
set config cluster name <name>
set config cluster log-default

set config cluster stat-name <stat-name>
set config cluster sub-name <sub-name>
```

**Note:**

- In case of a configured SPB cluster, make sure that you first run these commands on the domain manager node. Run this CLI command to find the node that is designated as the domain-manager:

  ```
  show config cluster domain-manager
  ```

- In case of a new SPB cluster configuration, first set the domain manager by running this CLI command and then run the other commands:

  ```
  set config cluster domain-manager <ip-address>
  ```

- When compatibility version 2 is set, you need to configure the internal-service IP.

| Attribute | Description |
|---|---|
| compatibility version | Configures the PTS to use a different IP subnet for internal service (PTS to PTS) and external service (PTS to non-PTS) traffic. |
| log-default | Enable/disable the logging of statistics and heartbeats when the system is configured with the default cluster name. |
| name | Group PTS elements by name. |
| sub-name | Elements are considered local to one another if they are in the same sub-cluster. |
| stat-name | The name used to represent the cluster when writing stats. |

| Attribute | Description |
|---|---|
| domain-manager | IP of the domain manager message broker. |
| name | The cluster name of the SPB servers. |
| servers | Space separated list of server IP addresses in the cluster. Use this configuration on a database-only server. |

### 3.1.1.3 set config service database

Configures SPB database settings.

```
set config service database auto-vacuum enabled <true|false>
set config service database auto-vacuum freeze-max-age <int>
set config service database enabled <true|false>
set config service database ssl enabled <true|false>
set config service database ip-address <ip-address>
set config service database port <int:0..>
set config service database name <name>
set config service database username <username>
set config service database password <password>
set config service database auto-shutdown override enabled <true|false>
```

| Attributes | Description |
|---|---|
| auto-vacuum enabled | Vacuuming reclaims storage that dead tuples occupy. In general database operation, tuples (rows) that are deleted or obsoleted during an update are not physically removed from their table; they remain present until a VACUUM is done. Autovacuum vacuums periodically, especially on frequently updated tables. If this is set to **true**, the autovacuum process runs, otherwise autovacuum will not run. |
| auto-vacuum freeze-max-age | The freeze-max-age attribute is the maximum transaction ID (XID) age before a forced vacuum is done. |
| auto-shutdown override | Determines whether the database will automatically shut down at 99% disk usage. |
| enabled | When set to **true** the database service is enabled and runs. If set to **false** the database service is disabled. For example this command is set to **false** to configure an application-server-only network element, otherwise it is set to **true**. |
| ssl enabled | Determines whether the application server will only make SSL encrypted connections to the database. If set to true, you must configure the database to allow SSL connections. |
| ip-address | IP of the server hosting the database for the SPB. The default is 127.0.0.1. |
| name | Name of the database in which statistics and subscriber information are stored. The default is `sv_stat`. |
| username | User name for connections to the statistics database. The default is `svspb`. |
| password | Password for connections to the statistics database. |
| port | The port to connect to the database. The default is 5432. |

### 3.1.1.4 set config service application-server bind-address

Configure the bind-address for the application server.

```
set config service application-server bind-address <ip-address>
```

where ip-address can be an IPv6 or an IPv4 address.

Committing changes to this command requires restarting the application server.

# 3.1.2 SPB Advanced Configuration Commands

These advanced SPB configuration commands should not be configured without consulting Sandvine Customer Support or its authorized partner.

## 3.1.2.1 set config service ip-user-map monitoring enabled

Enables monitoring of the IpUserMap process for overload conditions.

```
set config service ip-user-map monitoring enabled <true|false>
```

## 3.1.2.2 set config service ip-user-map monitoring degraded-state-processing

Configures degraded state processing when monitoring IP mapping.

```
set config service ip-user-map monitoring degraded-state-processing enabled <true|false>

set config service ip-user-map monitoring degraded-state-processing process-logins-as-logouts
 <true|false>

set config service ip-user-map monitoring degraded-state-processing set-login-attributes
<true|false>

set config service ip-user-map monitoring degraded-state-processing set-logout-attributes
<true|false>

set config service ip-user-map monitoring degraded-state-processing ip-assignment-history
<true|false>

set config service ip-user-map monitoring degraded-state-processing fatal-holdoff <int:0..>

set config service ip-user-map monitoring degraded-state-processing threshold queue-size rising
 <int:0..100>

set config service ip-user-map monitoring degraded-state-processing threshold queue-size falling
 <int:0..100>

set config service ip-user-map monitoring degraded-state-processing threshold lag rising
<int:0..>

set config service ip-user-map monitoring degraded-state-processing threshold lag falling
<int:0..>

set config service ip-user-map monitoring degraded-state-processing threshold lag fatal <int:0..>
```

| Attribute | Description |
|---|---|
| enabled | Enable monitoring of the IPUserMap process for overload conditions. |
| fatal-holdoff | Hold off (pause) period after fatal state when IPUserMapper is paused momentarily. IPUserMap will not process any packets during this time. IP lookups are also disabled. |
| ip-assignment-history | Create IP assignment history in degraded state. |
| process-logins-as-logouts | Process logins as logouts in degraded state. If enabled, IPUserMap will use the login IP to logout an existing session, but will not login the new subscriber. |
| set-login-attributes | Set login attributes in degraded state. |
| set-logout-attributes | Set logout attributes in degraded state. |
| threshold queue-size rising | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 75. |
| threshold queue-size falling | IPUserMap enters the degraded state when the current queue size is equal to or greater than this value. This value is expressed as a percentage of the maximum queue size. Default is 65. |

| Attribute | Description |
|---|---|
| lag rising | IPUserMap enters the degraded state when the current processing lag time is less than this value. Default is 240. |
| lag falling | IPUserMap enters the degraded state when the current processing lag time, is less than this value. Default is 200. |
| lag fatal | IPUserMap enters the degraded state when the current processing lag time, is less than this value. Default is 300. |

# 3.1.3 Database Monitoring

These CLI commands configure how the database is monitored.

## 3.1.3.1 set config service db-monitor

Configures automatic database failover.

```
set config service db-monitor enabled <true|false>
set config service db-monitor vrrp-vhid <int:1..2147483647>
set config service db-monitor port <int:1024..65535>
set config service db-monitor polling-interval <int:1..900>
set config service db-monitor timeout-interval <int:3..2700>
```

| Attribute | Description |
|---|---|
| enabled | Enables or disables automatic database failover |
| polling-interval | Sets the frequency at which the database monitor polls the status of primary database |
| port | Sets the database port on which the database monitor connects to poll the status |
| timeout-interval | Sets the amount of time to wait before initiating a database failover after a failed poll attempt |
| vrrp-vhid | Sets the identified virtual host ID |

# 3.1.4 Message Broker

You should only change these configuration CLI commands in non-standard or special case SPB deployments.

## 3.1.4.1 set config service message-broker

Configures how SPB communicates with other network elements, the connections allowed by the message broker, and the maximum message size.

```
set config service message-broker enabled <true|false>
set config service message-broker max-connections <int:300..>
set config service message-broker max-msg-size <int:0..>
```

You need to restart the message broker to commit these changes.

| Attribute | Description |
|---|---|
| enabled | Determines whether the message broker will start on boot-up. |
| max-connections | Specifies the maximum number of active client connections allowed by the message broker. |
| max-msg-size | Specifies the maximum message size allowed by the message broker. |

# 3.1.5 Application Server

You should only change these configuration variables in non-standard or special case deployments of SPB:

## 3.1.5.1 set config service application-server enabled

Enables or disables whether the application server will start on boot.

```
set config service application-server enabled <true|false>
```

Committing changes to this command requires restarting the application server.

## 3.1.5.2 set config service application-server bind-address

Configure the bind-address for the application server.

```
set config service application-server bind-address <ip-address>
```

where ip-address can be an IPv6 or an IPv4 address.

Committing changes to this command requires restarting the application server.

## 3.1.5.3 set config service application-server servlet

Configures the SPB application server servlet's settings.

```
set config service application-server servlet bind-address <ip-address>
set config service application-server servlet https enabled <true|false>
set config service application-server servlet https port <int:0..>
set config service application-server servlet https max-sessions <int:25..>

set config service application-server servlet http enabled <true|false>
set config service application-server servlet http port <int:0..>
set config service application-server servlet http max-sessions <int:25..>
```

Committing these command requires a restart.

| Attribute | Description |
|---|---|
| bind-address | The bind-address for the servlet as an IPv6 or IPv4 address |
| https enabled | Enables or disables HTTPS |
| https port | Sets the port for HTTPS |
| https max-sessions | Sets the maximum value of the HTTPS thread/sessions. Default is 25. |
| http enabled | Enables or disables HTTP |
| http port | Sets the port for HTTP |

| Attribute | Description |
|---|---|
| http max-sessions | Sets the maximum value of the HTTP thread/sessions. Default is 25. |

# 3.1.6 SPB Services

You should only change these configuration CLI commands in non-standard or special case deployments of SPB services.

## 3.1.6.1 set config service api web schema-validation enabled

Enables or disables web-services request schema validation.

```
set config service api web schema-validation enabled <true|false>
```

## 3.1.6.2 set config service api web stats-collection

Configures the web API statistics collection variables.

```
set config service api web stats-collection period <int:0..>
set config service api web stats-collection recovery-threshold <int:0..>
```

| Attribute | Description |
|---|---|
| period | The amount of time that the periods may be skewed by when the PTS publishes |
| recovery-threshold | The amount of time, in seconds, to wait for statistics before considering them expired |

## 3.1.6.3 set config service change-notification

Set whether to send change notification messages in mode pre-5.60 or 5.60 or mixed.

```
set config service change-notification ip-assignment enabled <true|false>
set config service change-notification mode <pre-5.60|5.60|mixed>
set config service change-notification session-attribute enabled <true|false>
set config service change-notification subscriber-attribute enabled <true|false>
```

| Attribute | Description |
|---|---|
| ip-assignment enabled | Enables/disables IP assignment change notifications |
| mode | There is a change notification message format change between pre-5.60 releases and 5.60. Depending on the software versions of the PTS(s) the change notifications are going out to, set to one of:<br>• 1, when all PTSs are pre-5.60<br>• 2, when all PTSs are 5.60<br>• or 1, 2, when the PTSs are mixed |
| session-attribute enabled | Enables/disables session attribute assignment change notifications |
| subscriber-attribute enabled | Enables/disables subscriber attribute assignment change notifications |

### 3.1.6.4 set config service database

Configures SPB database settings.

```
set config service database auto-vacuum enabled <true|false>
set config service database auto-vacuum freeze-max-age <int>
set config service database enabled <true|false>
set config service database ssl enabled <true|false>
set config service database ip-address <ip-address>
set config service database port <int:0..>
set config service database name <name>
set config service database username <username>
set config service database password <password>
set config service database auto-shutdown override enabled <true|false>
```

| Attributes | Description |
|---|---|
| auto-vacuum enabled | Vacuuming reclaims storage that dead tuples occupy. In general database operation, tuples (rows) that are deleted or obsoleted during an update are not physically removed from their table; they remain present until a VACUUM is done. Autovacuum vacuums periodically, especially on frequently updated tables. If this is set to **true**, the autovacuum process runs, otherwise autovacuum will not run. |
| auto-vacuum freeze-max-age | The freeze-max-age attribute is the maximum transaction ID (XID) age before a forced vacuum is done. |
| auto-shutdown override | Determines whether the database will automatically shut down at 99% disk usage. |
| enabled | When set to **true** the database service is enabled and runs. If set to **false** the database service is disabled. For example this command is set to **false** to configure an application-server-only network element, otherwise it is set to **true**. |
| ssl enabled | Determines whether the application server will only make SSL encrypted connections to the database. If set to true, you must configure the database to allow SSL connections. |
| ip-address | IP of the server hosting the database for the SPB. The default is 127.0.0.1. |
| name | Name of the database in which statistics and subscriber information are stored. The default is `sv_stat`. |
| username | User name for connections to the statistics database. The default is `svspb`. |
| password | Password for connections to the statistics database. |
| port | The port to connect to the database. The default is 5432. |

### 3.1.6.5 set config security enabled

Configures whether calls to the Subscriber API will be authenticated.

```
set config security enabled <true|false>
```

### 3.1.6.6 set config service subscriber-management audit

Configures subscriber management auditing settings.

```
set config service subscriber-management audit transitions ip-assignment enabled <true|false>
set config service subscriber-management audit transitions subscriber-attribute enabled
<true|false>
set config service subscriber-management audit transitions session-attribute enabled <true|false>
set config service subscriber-management audit records session-attributes enabled <true|false>
set config service subscriber-management audit records ip-assignment-history enabled <true|false>
```

| Attributes | Description |
|---|---|
| transitions ip-assignment enabled | If enabled, change notifications and the IP history are created for all IP changes, including multiple transitions within a single batch of processing. |
| transitions subscriber-attribute enabled <boolean> | If enabled, change notifications and attribute audit records are created for all subscriber attribute changes, including multiple transitions with a single batch of processing. |
| session-attribute enabled | If enabled, session attribute audit records are logged to the database, available either through direct SQL or via Reporting Services.<br>**Note:** Enabling this option decreases the maximum rate of dynamic IP mappings (including RADIUS and DHCP IP mapping) and requires careful consideration of data retention and disk-write performance.<br>The retention period of the session_attr_audit table determines how long the session audit history is kept in the database. Decrease this period for high session rates. |
| ip-assignment-history enabled | If enabled, IP assignment history is logged to the database. |

# 3.2 Warm Standby CLI Commands

## 3.2.1 CLI Commands for Primary Database

You can configure the SPB database server as the primary database server, in a warm standby system, through the use of these CLI commands.

Required command:

```
set config service warm-standby server <ip-address>
```

Recommended command:

```
set config service warm-standby archive email <email-address>
```

**start service warm-standby primary**

Run the `start service warm-standby primary` CLI command to start the warm-standby service on primary server. When the service is started for the first time, a is required to copy the public key to the standby server.

## 3.2.2 CLI Commands for Standby Database

You can start and configure the standby SPB database server, in a warm standby system, using these CLI commands.

The recommended command is:

```
set config service warm-standby restore email <email-address>
```

**start service warm-standby standby**

Run the `start service warm-standby standby` command to start the warm standby service on the standby server.

### 3.2.3 set config service warm-standby

Configures the warm standby feature.

```
set config service warm-standby server <ip-address>
set config service warm-standby archive email <email-address>
set config service warm-standby archive frequency <int:0..10080>
set config service warm-standby archive log <log>
set config service warm-standby archive threshold warning <int:0..90>
set config service warm-standby archive threshold stop <int:0..90>
set config service warm-standby restore email <email-address>
set config service warm-standby restore frequency <int:0..10080>
```

| Attribute | Description |
|---|---|
| server | The IP address of the standby server. |
| archive email | The email address to which warning emails will be sent in the event that database log files cannot be successfully archived and disk usage exceeds the warning threshold. |
| archive frequency | The frequency with which warning emails are sent in the case that database archival continues to fail and disk usage continues to exceed the value set using `set config service warm-standby archive threshold` CLI configuration command. This value is expressed in minutes and the default is 5. |
| archive log | The directory on the standby server to which database log files are archived. This is specified as a subdirectory of the pgsql database user home directory, typically /usr/local/pgsql.<br>**Note:** Set this variable on both the primary and standby servers, when a non-default directory is chosen as the archive location. |
| archive threshold warning | The transaction log disk capacity beyond which warning emails are sent if a log file cannot be archived. This value is expressed as a percentage and is typically slightly higher than the expected steady state usage of the transaction log disk. The default is 25. |
| archive threshold stop | Indicates the transaction log disk capacity beyond which database archival is disabled altogether. This measure is needed to prevent the primary database server from running out of disk space and enforcing a mandatory shutdown. This value is expressed as a percentage and should typically be near full disk capacity. The default is 90. |
| restore email | The email address to send warning emails to in the event that database log files are not successfully restored on the standby server. |
| restore frequency | Assuming database archival is functioning properly, the length of time that the database restore process waits for a database log file before sending a warning email. This is also the frequency with which subsequent warning emails are sent in the event that the database restore process continues to wait. This value is expressed in minutes and the default is 5. |

# 3.3 Tuning CLI Commands

The SPB subscriber management configuration parameters related to sizing and tuning are:

## 3.3.1 set config service subscriber-management cache subscribers

Configures database sizing and tuning for subscriber data.

```
set config service subscriber-management cache subscribers max <int:0..>
set config service subscriber-management cache subscribers max-name-length <int:1..255>
set config service subscriber-management cache subscribers avg-name-length <int:1..255>
set config service subscriber-management cache subscribers ip-assignments max <int:0..>
set config service subscriber-management cache subscribers ip-assignments buffers max-subscribers
 <int:0..100>
set config service subscriber-management cache subscribers ip-assignments buffers
max-ip-assignments <int:0..100>
set config service subscriber-management cache subscribers ip-assignments buffers max-attributes
 <int:0..100>
```

| Attribute | Description |
|---|---|
| max | The maximum number of subscriber records that can be in memory |
| max-name-length | The maximum length for a subscriber name |
| avg-name-length | The average length for a subscriber name |
| ip-assignments max | The maximum number of IP assignment record that can be in memory |
| ip-assignments buffers max-subscribers | The percentage of buffer space to allocate to subscribers. |
| ip-assignments buffers max-ip-assignments | The percentage of buffer space to allocate to IP assignments |
| ip-assignments buffers max-attributes | The percentage of buffer space to allocate to subscriber attributes. |

## 3.3.2 set config service subscriber-management cache attributes

Configures database sizing and tuning for subscriber attribute data.

```
set config service subscriber-management cache attributes max <int:0..>
set config service subscriber-management cache attributes max-length <int:0..>
set config service subscriber-management cache attributes major-memory-blocks <int:0..>
set config service subscriber-management cache attributes minor-length <int:0..>
set config service subscriber-management cache attributes major-length <int:0..>
```

| Attribute | Description |
|---|---|
| max | Maximum total number of attributes that can be stored in memory. |
| max-length | Maximum attribute value size in bytes that the system will accept. |
| major-memory-blocks | The number of major memory blocks (of size major-length) available. Major blocks are only used when an attribute's value exceeds minor-length. |
| minor-length | An attribute value with length in bytes <= to this value will be stored in a single minor attribute memory block. Default is 20. |

| Attribute | Description |
|---|---|
| major-length | An attribute value with length in bytes that is greater than minor-length and less than or equal to max-length is stored in one or more chained major blocks of length equal to this value. For example, if major-length=512, and the length of an attribute value is 600 bytes, it will be stored in two 512 byte blocks, “wasting” 424 bytes in one of the major blocks. Default is 128. |

### 3.3.3 set config service attribute-archiver

The subscriber attribute archiver takes a snapshot of the in-memory attributes and persists them to disk so that they can be used in Network Demographics reports and API requests of subscriber statistics by attribute. The archiver archives each subscriber attribute where the attribute is marked as reportable. By default, all attributes are reportable. The archived attributes are then available for queries that join against the subscriber statistics.

## 3.4 SPB Hierarchy

The SPB hierarchy is configured with this CLI command:

### 3.4.1 add config data-home

Adds a row to the table of SPB hierarchy settings.

```
add config data-home <int:1..> name <name> display-name <display-name> url <url>
add config data-home <int:1..> name <name> display-name <display-name> url <url> parent <parent>
```

Committing these commands requires a restart.

| Attribute | Description |
|---|---|
| data-home | A unique ID representing a datahome in the hierarchy. |
| name | The name of the datahome. This is the same as the SPB cluster name. |
| display-name | The display name of the datahome. |
| url | The URL that the message broker uses to send messages between sites. Use this format:<br>`ssl://<hostname>:2507`<br>Where <hostname> is the hostname of the datahome or IP address. |
| parent | The name of the datahome's parent in the hierarchy (optional). |

## 3.5 Subscriber IP Mapping

These CLI commands configure features of subscriber-IP mapping, with specific commands for DHCP or RADIUS implementations described in these sections.

# 3.5.1 General Subscriber IP Mapping CLI Commands

## 3.5.1.1 set config service ip-user-map enabled

Enables IP mapping.

```
set config service ip-user-map enabled <true|false>
```

# 3.5.2 set config service ip-user-map realm

Configures the subscriber realm to populate subscribers into.

```
set config service ip-user-map realm <realm>
```

# 3.5.3 add/delete config service ip-user-map forwarding-address

Adds or deletes the IP and port for forwarding addresses for login or logout packets.

## 3.5.3.1 add config service ip-user-map forwarding-address

Configures forwarding login and logout packets to an IP and port.

```
add config service ip-user-map forwarding-address login <string>
add config service ip-user-map forwarding-address logout <string>
```

| Attribute | Description |
|---|---|
| login | The IP and port to forward login packets to (in quotes). |
| logout | The IP and port to forward logout packets to (in quotes). |

**Example:**
```
SRP# add config service ip-user-map forwarding-address login "10.10.10.10 1111"
```

## 3.5.3.2 delete config service ip-user-map forwarding-address

Deletes the configuration for the specified row, where row is the IP address as a string.

```
delete config service ip-user-map forwarding-address login <row>
delete config service ip-user-map forwarding-address logout <row>
```

# 3.5.4 set config service ip-user-map <service> enabled

Enables or disables the specified service.

```
set config service ip-user-map dhcp enabled <true|false>
```

```
set config service ip-user-map radius enabled <true|false>
```

# 3.5.5 set config service ip-user-map <service> parser instances

Configures the number of internal parser instances allocated to parsing DHCP or RADIUS packets.

```
set config service ip-user-map dhcp parser instances <int:1..10>
```

```
set config service ip-user-map radius parser instances <int:1..10>
```

# 3.5.6 set config service ip-user-map <service> capture-mode

Set the format in which packets are forwarded to the SPB. This command is only relevant for deployments using PTS sniffing.

```
set config service ip-user-map dhcp capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

```
set config service ip-user-map radius capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

| Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

# 3.5.7 DHCP Configuration CLI Commands

These CLI commands need to be set to enable and configure DHCP sniffing for subscriber IP mapping.

## 3.5.7.1 set config service ip-user-map dhcp boot-file source

Sets the source of the subscriber attribute.

```
set config service ip-user-map dhcp boot-file source
<none|filename-only|filename-first|option-67-only|option-67-first>
```

| Parameter | Description |
|---|---|
| none | Turn off this feature. |
| filename-only | Use only the static BOOTP 'bootfile name' field. |
| filename-first | Try using the static BOOTP 'bootfile name' field first. If it is empty (after regex/formatting, if used), try using the DHCP option 67 field. |
| option-67-only | Use only the DHCP option 67 field. |
| option-67-first | Try using the DHCP option 67 field first. If it is empty (after regex/formatting, if used) or does not exist, try using the static BOOTP 'bootfile name' field. Note that the 'bootfile name' field will not be read if it is being used for option overloading (that is, if option 52 exists in the packet and is 1 or |

| Parameter | Description |
|---|---|
| | 3). The value may be compared against a regex and formatted, and if the value does not match the regex, or if it does but the formatted value is blank, then the attribute will not be written. |

### 3.5.7.2 set config service ip-user-map dhcp boot-file attribute

Configures subscriber attribute mapping from the DHCP bootfile.

```
set config service ip-user-map dhcp boot-file attribute name <name>
set config service ip-user-map dhcp boot-file attribute regex <regex>
set config service ip-user-map dhcp boot-file attribute regex-replace <regex-replace>
set config service ip-user-map dhcp boot-file attribute expiry <time>
```

| Attribute | Description |
|---|---|
| name | The name of the attribute. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |
| expiry | The expiry is expressed as an offset from mapping time and may be defined as:<br>• Infinity<br>• A combination of n days, n hours, n minutes, n seconds<br>The default is infinity. |

### 3.5.7.3 add config service ip-user-map dhcp

Adds configuration for DHCP IP mapping.

```
add config service ip-user-map dhcp interface <string>
add config service ip-user-map dhcp interface <string> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
add config service ip-user-map dhcp login-attribute <string> value <value>
add config service ip-user-map dhcp login-attribute <string> value <value> expiry <expiry>
add config service ip-user-map dhcp attribute-mapping <string>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session> regex
 <regex>
add config service ip-user-map dhcp attribute-mapping <string> type <subscriber|session> regex
 <regex> regex-replace <regex-replace>
```

| Attribute | Description |
|---|---|
| interface | Interfaces on which to listen for DHCP packets. |
| capture-mode | The format in which packets are forwarded to the SPB. |
| attribute-mapping | DHCP header fields to map to subscriber attributes. |
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |
| login-attribute | Subscriber attributes that are set when a subscriber logs in. |

| Attribute | Description |
|---|---|
| expiry | A list of offsets from the current time when the attribute assignment should expire. For example:<br>`add config service ip-user-map dhcp login-attribute "tier" value "Gold" expiry "21 days 7 hours"`<br>You can combine: :<br>• *n* days<br>• *n* hours<br>• *n* minutes<br>• *n* seconds |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will rewrite the MAC address to accept packets forwarded from another device. |
| mirror | The SPB will accept packets forwarded out a mirror port or SPAN port of another device. |

### 3.5.7.4 set config service ip-user-map dhcp single-ip

Enables or disables subscriber single IP mode. Single IP mode ensures that the IP assignment unassigns all other IP assignments the subscriber may have.

```
set config service ip-user-map dhcp single-ip <true|false>
```

### 3.5.7.5 set config service ip-user-map dhcp interface

Alters the configuration of the interfaces on which to listen for DHCP packets.

```
set config service ip-user-map dhcp interface <row> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
```

| Attributes | Description |
|---|---|
| interface | The IP address of the interface serves as the row key into the configuration table. |
| capture-mode | The format in which packets are forwarded to the SPB. |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

### 3.5.7.6 set config service ip-user-map attribute-mapping delimiter

Configures the delimiter to be used in when mapping attributes.

Valid values are any single printable character. An empty value is also permitted. The default is “, “ (comma).

### 3.5.7.7 set config service ip-user-map dhcp subscriber-identifier

Configures how subscriber IDs are handled.

```
set config service ip-user-map dhcp subscriber-identifier mode <cpe-mac|option-82>
set config service ip-user-map dhcp subscriber-identifier ascii <true|false>
set config service ip-user-map dhcp subscriber-identifier case <unchanged|to-upper|to-lower>
set config service ip-user-map dhcp subscriber-identifier sub-option
<agent-circuit-id|agent-remote-id>
```

| Attribute | Description |
|---|---|
| mode | Determines where to find the unique identifier for subscribers in DHCP packets. |
| ascii | Determines whether to handle the subscriber UID data, as determined by mode, as an opaque binary string and represent it as hex, or to assume it is ASCII-encoded and represent it as a normal hex string. The default is hex, since the hex representation is appropriate for MAC addresses, which is most often the case. |
| case | Indicates if the DHCP username should be converted. |
| sub-option | The DHCP Option 82 sub option used to represent the subscriber ID. |

| Parameter | Description |
|---|---|
| cpe-mac | Use the CPE MAC address of a subscriber. |
| option-82 | The DHCP Option 82 suboption used to represent the subscriber ID. |
| unchanged | If ASCII, leave the username in its natural case, if MAC address, use uppercase. |
| to-upper | Convert to uppercase, using the default locale. |
| to-lower | Convert to lowercase, using the default locale. |
| agent-circuit-id | For DHCP Option 82, the Circuit ID sub-option carries information specific to which circuit the request came in on, depending on the relay agent. |
| agent-remote-id | For DHCP Option 82, the Remote ID sub-option carries information relating to the remote host end of the circuit, usually containing information that identifies the relay agent. |

## 3.5.8 RADIUS Configuration CLI Commands

### 3.5.8.1 set config service ip-user-map radius subnet-mask

Assign a block of IPs on accounting start requests.

```
set config service ip-user-map radius subnet-mask enabled <true|false>
set config service ip-user-map radius subnet-mask limit <int:1..30>
```

| Attribute | Description |
|---|---|
| enabled | If subnet mask is enabled (true), then on accounting start requests a group of IP addresses are assigned to a particular subscriber and on accounting stop requests they are unassigned. If false, the IP Mapper assigns and unassigns a single IP address to the subscriber. |
| limit | Limits the number of IP addresses that can be assigned to a particular subscriber. For example, if the subnet bit mask limit is 8, then 256 IP addresses can be assigned to the subscriber. Default is 16. |

### 3.5.8.2 add config service ip-user-map radius

Adds configuration for RAIDUS IP mapping.

```
add config service ip-user-map radius accounting sub-name attribute <string>
add config service ip-user-map radius accounting sub-name attribute <string> regex <regex>
add config service ip-user-map radius accounting sub-name attribute <string> regex <regex>
regex-replace <regex-replace>
add config service ip-user-map radius attribute-definition <string> type
<date|integer|ip-address|octets|string|text>
add config service ip-user-map radius attribute-filter <string> regex <regex>
add config service ip-user-map radius attribute-filter-required <true|false>
add config service ip-user-map radius attribute-mapping <string>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
regex <regex>
add config service ip-user-map radius attribute-mapping <string> type <subscriber|session>
regex <regex> regex-replace <regex-replace>
add config service ip-user-map radius interface <string>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
capture-mode <normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
add config service ip-user-map radius interface <string> shared-secret <shared-secret>
capture-mode <normal-udp|encapsulated-udp|layer-2-rewrite|mirror> reply <true|false>
add config service ip-user-map radius ip-attribute <string>
add config service ip-user-map radius login-attribute <string> value <value>
add config service ip-user-map radius login-attribute <string> value <value> expiry <expiry>
add config service ip-user-map radius logout-attribute <string> value <value>
add config service ip-user-map radius logout-attribute <string> value <value> expiry <expiry>
add config service ip-user-map radius packet-merging attribute <string> value <int>
add config service ip-user-map radius packet-merging dominant-packet
add config service ip-user-map radius packet-merging merge-key <string>
add config service ip-user-map radius session-tracking session-id-attribute <string>
```

Committing these commands requires a restart.

| Attribute | Description |
|---|---|
| interface | Interfaces on which to listen for RADIUS packets. |
| shared-secret | The RADIUS shared secret password. A password is required for each interface.<br>**Note:** This variable is only required for deployments using NAS replication. |
| capture-mode | The format in which packets are forwarded to the SPB. |
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. |
| session-tracking session-id-attribute | Specifies the RADIUS attributes to be used together to form the unique session identifier for STATEFUL tracking mode. You can choose these attributes for the unique per subscriber login session. |

| Attribute | Description |
|---|---|
| | A standard RADIUS attribute example is to configure NAS-IP-Address together with Acct-Session-Id as the session ID, as:<br>`add config service ip-user-map radius session-tracking session-id-attribute 44`<br>A vendor-specific attribute example is to configure 3GPP2-Correlation-Id as the session ID:<br>`add config service ip-user-map radius session-tracking session-id-attribute "VSA 5535 44"` |
| packet-merging attribute | The list of RADIUS attributes that defines which RADIUS packets to merge. |
| packet-merging dominant-packet | The RADIUS attribute which takes precedence in the case of a merge conflict. |
| packet-merging merge-key | The RADIUS attributes which define the key used to match up RADIUS packets to merge. For example, to use the User-Name (1) to match up RADIUS packets for merging:<br>`add config service ip-user-map radius packet-merging merge-key 1` |
| attribute-definition | Add new custom RADIUS attributes, or override the data type of existing RADIUS attributes. |
| attribute-filter | RADIUS attribute used to filter which RADIUS attributes are processed. |
| attribute-filter-required | Indicates if an attribute filter is required. |
| attribute-mapping | RADIUS attributes to map to subscriber attributes. |
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| type | The data type; one of string, text, ip-address, integer, date or octets. |
| regex | Optional regular expression that value must match to be mapped. |
| regex-replace | Optional Boost-style format string to use for values to map. |
| login-attribute value | Subscriber attributes that are set when a subscriber logs in. |
| login-attribute | Subscriber attributes that are set when a subscriber logs out. |
| logout-attribute <string> value <value> | A list of values to set the attribute to when the subscriber logs out. |
| logout-attribute <string> value <value> expiry <expiry> | A list of values to set the attribute to when the subscriber logs out and their expiry time as an offset from the current time. |
| accounting sub-name attribute | RADIUS attribute, for example "4" or "VSA 5535 44". |
| ip-attribute | The RADIUS attribute to use as the subscriber IP address. For example, "4" or "VSA 5535 44" or "VSA 5535 44 TLV 4". |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the DHCP ACK packets or the RADIUS UDP packets and forward them directly to the SPB. |

| Capture Mode Parameter | Description |
|---|---|
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB will accept packets that have been forwarded from another device by rewriting the MAC address. |
| mirror | The SPB will accept packets that have been forwarded out a mirror port or SPAN port of another device. |

### 3.5.8.3 set config service ip-user-map radius interface

Configures the interfaces on which to listen for RADIUS packets.

```
set config service ip-user-map radius interface <row> shared-secret <shared-secret>
set config service ip-user-map radius interface <row> capture-mode
<normal-udp|encapsulated-udp|layer-2-rewrite|mirror>
set config service ip-user-map radius interface <row> reply <true|false>
```

Committing these command requires a restart.

| Attributes | Description |
|---|---|
| capture-mode | The format in which packets are forwarded to the SPB. |
| shared-secret | The RADIUS shared secret password. A password is required for each interface. |
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. |

| Capture Mode Parameter | Description |
|---|---|
| normal-udp | The PTS will overwrite the destination address of the RADIUS UDP packets and forward them directly to the SPB. |
| encapsulated-udp | The PTS will encapsulate the entire packet off the wire (including all headers) and send it to the SPB within a UDP packet. This mode enables the SPB to track RADIUS authentication sessions and use RADIUS authentication packets to set subscriber attributes. |
| layer-2-rewrite | The SPB rewrits the MAC address in order to accept packets forwarded from another device. |
| mirror | The SPB will accept packets forwarded out a mirror port or SPAN port of another device. |

### 3.5.8.4 set config service ip-user-map radius accounting

Configures how the SPB handles RADIUS accounting.

```
set config service ip-user-map radius accounting reply <true|false>
set config service ip-user-map radius accounting sub-name delimiter <delimiter>
set config service ip-user-map radius accounting reply-before-commit <true|false>
```

| Attribute | Description |
|---|---|
| reply | Specifies if RADIUS accounting request packets require a response packet. Enabling accounting replies is not compatible with encapsulated capture mode. Default is false. |

| Attribute | Description |
|---|---|
| sub-name delimiter | Configures the delimiter between multiple RADIUS attributes when building the sub-name from multiple attributes. For example:<br>`set config service ip-user-map radius accounting sub-name delimiter XYZ`<br>`set config service ip-user-map radius accounting sub-name attribute 1 regex 30`<br>`set config service ip-user-map radius accounting sub-name attribute 2 regex 31`<br>would build a subscriber name like: "`30XYZ31` Any ASCII variable, including an empty string is valid. The default is ". " |
| reply-before-commit | If configured to send accounting replies, this variable configures whether to send accounting replies immediately, or after all relevant RADIUS information has been committed. If this variable is set to true, replies will be immediate, however between the accounting reply and persisting the RADIUS information there is a window during which an SPB failure will cause a loss of information. If set to false, replies will not be sent until information is persisted. There will, however be a delay before reply, and replies will come in a burst since RADIUS information is persisted in batches. Default is false. |

### 3.5.8.5 set config service ip-user-map radius session-tracking

Configures how session tracking is handled.

```
set config service ip-user-map radius session-tracking session-continue enabled <true|false>
set config service ip-user-map radius session-tracking event-timestamp enabled <true|false>
set config service ip-user-map radius session-tracking mode <normal|stateful|ignore-stops>
```

| Attribute | Description |
|---|---|
| session-continue enable | Enable monitoring of the 3GPP2-Session-Continue attribute. If set to true, accounting stop packets that have the 3GPP2-Session-Continue attribute set to 1 will not cause the subscriber's IP address to be unassigned. The default value is false. |
| event-timestamp enabled | Set to true to use the Event-Timestamp RADIUS attribute for the event time of IP and attribute mappings, when present. |
| mode | Controls how RADIUS accounting START and STOP messages are handled. The options are:<br>• normal: a START message logs the subscriber in (or keeps them logged in and updates their IP/attributes information) and a STOP logs them out.<br>• stateful: a START is treated the same way as in normal mode, and a STOP only logs a subscriber out if it is from the same NAS and part of the same session as the last START message that came in for that subscriber; otherwise, it is ignored (that is, state is kept on the NAS-IP-Address and Acct-Session-Id attributes of each subscriber).<br>• ignore-stops: a START is treated the same way as in NORMAL mode, and STOP messages are completely ignored. |

### 3.5.8.6 set config service ip-user-map radius packet-merging

Configures RADIUS packet-merging settings.

```
set config service ip-user-map radius packet-merging enabled <true|false>
set config service ip-user-map radius packet-merging merge-key <string>
```

```
set config service ip-user-map radius packet-merging timeout <int:1..1000>
```

| Attribute | Description |
|---|---|
| enabled | Enables the RADIUS packet merging feature. This allows the attributes from two packets to be merged prior to persisting information. |
| timeout | How long to wait, in seconds, before discarding a packet that should be merged but has no matching pair. This can be increased significantly provided there is available memory. The 1000 second maximum is safe on a 32GB RAM SRP. |
| merge-key | RADIUS attributes that define the key used to match packets. |

### 3.5.8.7 set config service ip-user-map radius packet-merging attribute

Configures RADIUS attributes and values that define which RADIUS packets must be merged.

```
set config service ip-user-map radius packet-merging attribute <row> value <int>
```

| Parameter | Description |
|---|---|
| attribute | The RADIUS attribute that defines which RADIUS packets must be merged |
| value | The value for the RADIUS attribute |

### 3.5.8.8 add config service ip-user-map forwarding-address

Configures forwarding login and logout packets to an IP and port.

```
add config service ip-user-map forwarding-address login <string>
add config service ip-user-map forwarding-address logout <string>
```

| Attribute | Description |
|---|---|
| login | The IP and port to forward login packets to (in quotes). |
| logout | The IP and port to forward logout packets to (in quotes). |

**Example:**
```
SRP# add config service ip-user-map forwarding-address login "10.10.10.10 1111"
```

### 3.5.8.9 set config service ip-user-map realm

Configures the subscriber realm to populate subscribers into.

```
set config service ip-user-map realm <realm>
```

### 3.5.8.10 set config service ip-user-map radius single-ip

Enables or disables subscriber single IP mode.

```
set config service ip-user-map radius single-ip <false|true>
```

Enables subscriber single IP mode, ensuring that the IP assignment unassigns all other IP assignments the subscriber may have. True enables single IP mode and false allows multiple IP assignments to subscribers.

### 3.5.8.11 set config service ip-user-map radius subscriber

Configures how subscribers are handled.

```
set config service ip-user-map radius subscriber create-on-auth-request <true|false>
set config service ip-user-map radius subscriber id-case-conversion <to-lower|to-upper|unchanged>
```

| Attribute | Description |
|---|---|
| create-on-auth-request | Access-Request creates the subscribers in the system for the purpose of attribute mapping. |
| id-case-conversion | Determines if the case of the unique string identifying the subscriber is all uppercase, lowercase or should be unchanged. In the case of a MAC address, the unchanged setting results in upper case. The default is unchanged. |

### 3.5.8.12 set config service ip-user-map radius attribute-mapping

Configures mapping RADIUS attributes to subscriber attributes.

```
set config service ip-user-map radius attribute-mapping <row> type <subscriber|session>
set config service ip-user-map radius attribute-mapping <row> regex <regex>
set config service ip-user-map radius attribute-mapping <row> regex-replace <regex-replace>
```

| Attribute | Description |
|---|---|
| type | Subscriber or Session. Sets the mapped attributes defined by attribute-mapping as a Session Attribute or a Subscriber Attribute. A Session Attribute applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session, whereas Subscriber Attributes apply to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| regex | Optional regular expression that value must match for mapping to occur. |
| regex-replace | Optional Boost-style format string to use for values to map. |

| Parameter | Description |
|---|---|
| row | The RADIUS header field set using `add config service ip-user-map radius attribute-mapping`. |
| subscriber | Applies to a subscriber (and all of his/her sessions), and expires at attribute mapping's expiry time. |
| session | Applies only to the subscriber session which this DHCP packet pertains to, and expires at the end of the session. |

### 3.5.8.13 Regular Expressions and Replacement String Syntax

The java.util.regex library is used to process regular expressions and replacement strings.

These rules apply:

- Regular expressions are anchored. The entire string and regular expression are considered a match when they are an exact match. For example “.” only matches strings that consist of a single character. Note that the “^” and “$” characters are not required to match the beginning and end positions; they are implied.
- In regular expressions and in replacement strings, the “$” character does not need to be escaped using a preceding backslash (\). For example, you can enter "$1" to specify a replacement string that selects the first matching group.
- The supported Java replacement string constructs are:

- “$0” represents the whole input string that matched the regular expression.
- “$n” for n >= 1 represents the nth matching group in the regular expression.
- “?ntrue_expression:false_expression” means: if the nth group matched, substitute true_expression, otherwise substitute false_expression. A typical use of this syntax would be “?1True:False”, with a regular expression of “(abc.*)”, in which case the replacement string would resolve to “True” if the input string started with “abc”, and “False” otherwise. This construct may be nested; for example, “?1Bronze:?2Silver:?3Gold”.

**Example:**
**Regular Expression Example**

To only add subscribers with a name that starts with “8” followed by at least one character followed by an “@”.

```
SRP# add config service ip-user-map radius accounting sub-name attribute <attributeValue>
 regex "8.+@"
```

To map the NAS-PORT(5) to a subscriber attribute "subAttr" only if it is exactly four digits long and ends with “1”.

```
SRP# add config service ip-user-map radius attribute-mapping "5 subAttr" type subscriber
regex "\\d\\d\\d1" regex-replace "port-$0"
```

For the format of regular expressions and replacement strings see
http://java.sun.com/j2se/1.5.0/docs/api/java/util/regex/package-summary.html

**Example:**
**Substitution String Example**

To only add subscribers with a name that starts with 8, followed by at least nine characters, then the '@' sign, and to format the added value to “SUB:<first 10 characters of User-Name>”.

```
SRP# add config service ip-user-map radius attribute-mapping "5 subAttr" type subscriber
regex "\\d\\d\\d1" regex-replace "port-$0"
```

To map the NAS-PORT(5) to a subscriber attribute "subAttr" only if it is exactly four digits long and ends with 1, and pre-pend the added value with “port-”:

```
SRP# add config service ip-user-map radius attribute-mapping "5 subAttr" type subscriber
regex "\\d\\d\\d1" regex-replace "port-$0"
```

## 3.5.8.14 RADIUS Attributes from Change of Authorization (CoA) Messages

You can map RADIUS attributes, from Change of Authorization (CoA) messages used to drive subscriber-based SandScript, to subscriber attributes.

Before configuring CoA attribute mapping, check what UDP destination port is used for these RADIUS messages, and enable it in the IPUserMap configuration. For example, if CoA packets are sent to destination port 3799, a configuration similar to this is required:

```
SRP# set config service ip-user-map enabled true
SRP# set config service ip-user-map radius enabled true
SRP# add config service ip-user-map radius interface "PORT_1 3799
SRP# set config service ip-user-map radius capture-mode encapsulated-udp
SRP# add config service ip-user-map radius accounting sub-name attribute "31"
```

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