

UCC 5G PCF CLI Reference, Release 2026.04

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About this Guide

Note The documentation set for this product strives to use bias-free language. For purposes of this documentation set, bias-free is defined as language that does not imply discrimination based on age, disability, gender, racial identity, ethnic identity, sexual orientation, socioeconomic status, and intersectionality. While any existing biased terms are being substituted, exceptions may be present in the documentation due to language that is hardcoded in the user interfaces of the product software, language used based on RFP documentation, or language that is used by a referenced third-party product.

This preface describes the *Ultra Cloud Core 5G Policy Control Function CLI Command Reference*, the document conventions, and the customer support details.

- Conventions Used, on page xi
- Contacting Customer Support, on page xii

Conventions Used

The following tables describe the conventions used throughout this documentation.

Notice Type	Description
Information Note	Provides information about important features or instructions.
Caution	Alerts you of potential damage to a program, device, or system.
Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.

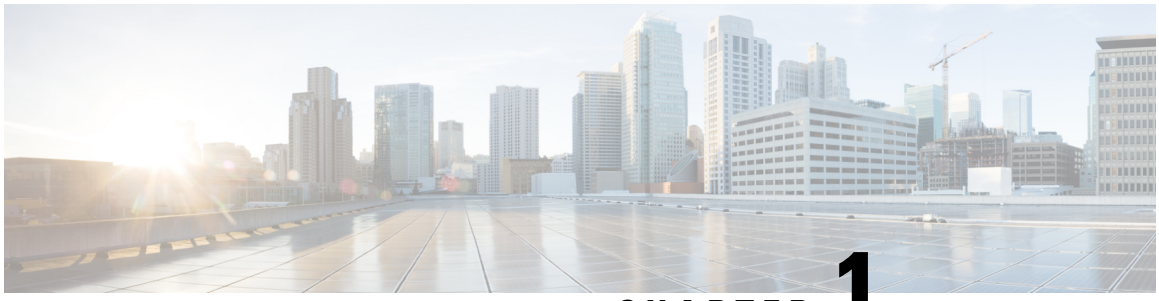
Typeface Conventions	Description
Text represented as a `screen display`	This typeface represents displays that appear on your terminal screen, for example: `Login:`

Typeface Conventions	Description
Text represented as **commands**	This typeface represents commands that you enter, for example: **show ip access-list** This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a **command** *variable*	This typeface represents a variable that is part of a command, for example: **show card** *slot_number* *slot_number* is a variable representing the applicable chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example: Click the **File** menu, then click **New**

Contacting Customer Support

Use the information in this section to contact customer support.

Refer to the support area of http://www.cisco.com for up-to-date product documentation or to submit a service request. A valid username and password are required to access this site. Please contact your Cisco sales or service representative for additional information.



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Mobile Policy Executive Commands

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aaa authentication

Configures the AAA-based user management parameters.

Command Modes

Exec

Syntax Description

aaa authentication users user admin change-password { old-password *old_password* **| new-password** *new_password* **| confirm-password** *new_password* **}**

old-password *old_password*

Specify the old password.

Must be a string.

new-password *new_password*

Specify the new password.

Must be a string.

confirm-password *new_password*

Confirm the new password.

Must be a string.

Usage Guidelines Use this command to configure the AAA-based user management parameters.

cd

Changes the current working directory.

Command Modes Exec

Syntax Description **cd** *directory***.ssh**

directory

Specify the directory name.

Must be a string.

Usage Guidelines Use this command to change the current working directory.

cdl clear sessions

Clears the data from the Cisco Data Layer (CDL) datastore.

Command Modes Exec

Syntax Description **cdl clear sessions [db-name** *database* **| filter** *filter* **| map-id** *map_id* **| slice-name** *slice_name* **]**

db-name *database*

Specify the database name to be queried.

Must be a string of minimum one to maximum 16 characters.

filter *filter*

Specify the filter.

map-id *map_id*

Specify the map-id to clear the data for a map.

Must be an integer.

slice-name *slice_name*

Specify the slice name to be queried.

Must be a string of minimum one to maximum 16 characters.

Usage Guidelines Use this command to clear the data from the Cisco Data Layer (CDL) datastore.

cdl clear sessions filter

Clears the Cisco Data Layer (CDL) datastore sessions based on the filter criteria.

Command Modes Exec

Syntax Description **cdl clear sessions filter { condition { ends-with | match | starts-with } | key** *key_value***}**

condition { ends-with | match | starts-with }

Specify the query expression.

key *key_value*

Specify the key value.

Usage Guidelines Use this command to clear CDL sessions based on the filter criteria.

cdl show indexes

Displays the indexes of the database from the datastore

Command Modes Exec

Syntax Description **cdl show indexes { db-name** *database* **| key** *key_value* **| limit** *maximum_indexes* **| map-id** *map_id* **| slice-name** *slice_name* **}**

db-name *database_name*

Specify to database name to be queried.

Must be a string.

key *key_value*

Specify to query value.

limit *maximum_indexes*

Specify the maximum number of indexes to be displayed.

Default value is 500.

map-id *map_id*

Specify the map-id to clear the data for a map.

Must be an integer.

slice-name *slice_name*

Specify the slice name to be queried.

Usage Guidelines Use this command to display the database indexes.

cdl show sessions

Displays the session data from the datastore.

Command Modes Exec

Syntax Description **`cdl show sessions {`** *`count`* **`|`** *`detailed`* **`|`** *`summary`* **`}`**

count

Specify to display the session count information.

Must be a string.

detailed

Specify to display the session details with data.

Must be a string.

summary

Specify to display the session details without data.

Must be a string.

Usage Guidelines Use this command to display the session data from the datastore.

cdl show status

Displays the status of the database from the datastore

Command Modes Exec

Syntax Description **`cdl show status db-name`** *`database_name`*

db-name *database_name*

Specify to display the status of the database.

Must be a string.

Usage Guidelines Use this command to display the status of the database from the datastore.

commit abort

Aborts the commit operation associated to the persist-ID.

Command Modes Exec

Syntax Description **commit { abort persist-id** *persist_id* **}**

abort persist-id *persist_id*

Specify to abort commit. Specify the persist-ID.

Must be an integer.

Usage Guidelines Use this command to abort the commit operation.

commit confirm

Confirms the commit operation for the persist-ID.

Command Modes Exec

Syntax Description **commit confirm persist-id** *persist_id*

persist-id *persist_id*

Specify to persist-ID for which the commit operation must be confirmed.

Must be an integer.

Usage Guidelines Use this command to confirm the commit operation for the persist-ID.

commit persist-ID

Displays the commits associated to the persist-ID.

Command Modes Exec

Syntax Description **commit persist-id** *persist_id*

persist-id *persist_id*

Specify to confirm the commit operation relevant to the persist-ID.

Must be an integer.

Usage Guidelines Use this command to display the commits associated to the persist-ID.

compare

Compares running configuration to another configuration or a file.

Command Modes Exec

Syntax Description **compare file {** *filename* **[.kube | .ssh] |** *another_configuration* **}**

***filename* [.kube | .ssh] |**

Specify the file name.

Must be a string.

another_configuration

another_configuration

Specify the configuration to be compared against.

Must be a string.

Usage Guidelines Use this command to configure the file that must be compared.

config exclusive

Manipulates the software configuration information to enter the exclusive configuration mode.

Command Modes Exec

Syntax Description **config exclusive [no-confirm]**

exclusive

Specify to enter the exclusive configuration mode.

no-confirm

Specify to apply the command without asking for confirmation.

Usage Guidelines Use this command to manipulate the software configuration information to enter the exclusive configuration mode.

config shared

Manipulates the software configuration information to enter the shared configuration mode.

Command Modes Exec

Syntax Description `config shared [ no-confirm ]`

shared

Specify to enter the shared configuration mode.

no-confirm

Specify to apply the command without asking for confirmation.

Usage Guidelines Use this command to manipulate the software configuration information to enter the shared configuration mode.

config terminal

Manipulates the software configuration information to enter the terminal configuration mode.

Command Modes Exec

Syntax Description `config terminal [ no-confirm ]`

terminal

Specify to enter the terminal configuration mode.

no-confirm

Specify to apply the command without asking for confirmation.

Usage Guidelines Use this command to manipulate the software configuration information to enter the terminal configuration mode.

deployment add

Configures the deployment parameters such as the list of cluster-name, and external IP and port number of the unified-api service.

Command Modes Exec

Syntax Description **deployment add config { cluster-name** *cluster_name* **| port** *port_number* **| unified-api-external-ip** *external_ip* **}**

cluster-name *cluster_name*

Specify the cluster name.

Must be a string.

port *port_number*

Specify the port number of the unified-api service.

Must be an address.

unified-api-external-ip *external_ip*

Specify the external IP of the unified-api service.

Must be an address.

Usage Guidelines Use this command to configure the deployment parameters such as the list of cluster-name, and external IP and port number of the unified-api service.

deployment remove-config

Removes the deployment configuration file.

Command Modes Exec

Syntax Description `deployment remove-config`

remove-config

Specify to remove the configuration file.

Must be a string.

Usage Guidelines Use this command to remove the deployment configuration file.

deployment show-config

Displays the deployment environment parameters.

Command Modes Exec

Syntax Description `deployment show-config`

show-config

Specify to display the deployment parameters.

Must be a string.

Usage Guidelines Use this command to display the deployment environment parameters.

describe

Displays the command information.

Command Modes Exec

Syntax Description **describe** *command*

command

Specify the command name.

Must be a string.

Usage Guidelines Use this command to view command information.

exit

Exits the current configuration mode and returns to the parent configuration mode.

Command Modes Exec

Syntax Description **exit**

Usage Guidelines Use this command to exit the current configuration mode and return to the parent configuration mode. When used in the Exec mode, exits the session.

help

Displays help information for specified command.

Command Modes Exec

Syntax Description **help** *command*

command

Specify the command name to display help information..

Must be a string.

Usage Guidelines Use this command to view help information for a specified command.

history

Configures the command history cache size.

Command Modes Exec

Syntax Description **history** *history_size*

history_size

Specify the command history cache size.

Must be an integer.

Usage Guidelines Use this command to configure the command history cache size.

id

Displays user ID information.

Command Modes Exec

Syntax Description `id`

Usage Guidelines Use this command to view user ID information.

idle-timeout

Configures the maximum duration a command can remain idle in seconds after which the system automatically terminates the command.

Command Modes Exec

Syntax Description **`idle-timeout`** *`idle_timeout`*

idle_timeout

Specify the idle timeout duration in seconds.

Usage Guidelines Use this command to configure the maximum duration a command can remain idle.

ignore-leading-space

Configures whether to ignore or consider leading whitespace at the beginning of a command.

Command Modes Exec

Syntax Description **`ignore-leading-space { false | true }`**

ignore-leading-space { false | true }

Specify false to ignore leading whitespace, and true to consider it.

Must be either "false" or "true".

Usage Guidelines Use this command to configure whether to ignore or consider leading whitespace at the beginning of a command.

job

Suspends the jobs that are running in the background.

Command Modes Exec

Syntax Description **`job stop`** *`job_id`*

job_id

Specify the job ID.

Must be an integer.

Usage Guidelines Use this command to suspend the jobs that are running in the background.

leaf-prompting

Enables or disables automatically querying for leaf values.

Command Modes Exec

Syntax Description **`leaf-prompting { false | true }`**

leaf-prompting { false | true }

Specify false to disable leaf prompting, true to enable.

Must be either "false" or "true".

Usage Guidelines Use this command to automatically query for leaf values.

license smart register

Registers the VNF for Smart Licensing.

Command Modes Exec

Syntax Description **`license smart register [ force ] idtoken`** *`idtoken`*

register

Specify to register the VNF for Smart Licensing.

Must be a string.

force

Specify to enable the force registration of the agent.

Must be a string.

idtoken

Specify the ID token to register the agent with.

Must be an integer.

Usage Guidelines Use this command to register the VNF for Smart Licensing.

license smart deregister

Deregisters the VNF for Smart Licensing.

Command Modes Exec

Syntax Description `license smart deregister`

deregister

Specify to deregister the VNF for Smart Licensing.

Must be a string.

Usage Guidelines Use this command to deregister the VNF for Smart Licensing.

license smart renew

Renew smart agent IDs and authentication.

Command Modes Exec

Syntax Description `license smart renew { ID | auth }`

renew

Specify to renew the smart agent IDs and authentication.

Must be an integer.

ID

Specify the ID to renew smart agent license registration information

auth

Specify to initiate a manual update of the license usage information with Cisco

Usage Guidelines Use this command to configure the license parameters for the NF.

logout session

Logs out a specific session.

Command Modes Exec

Syntax Description `logout session session`

session *session*

Specify the session from the possible completion options.

Must be a string.

Usage Guidelines Use this command to log out of a specific session.

logout user

Logs out a specific user from all sessions.

Command Modes Exec

Syntax Description `logout user user`

user *user*

Specify the user from the possible completion options.

Must be a string.

Usage Guidelines Use this command to log out a specific user from all the sessions.

no

Restores the command history cache size to its default setting. See the history command.

Command Modes Exec

Syntax Description `no history`

Usage Guidelines Use this command to configure the command history cache size to its default setting. Refer to the history command.

paginate

Configures whether or not to paginate CLI command output.

Command Modes Exec

Syntax Description `paginate { true | false }`

paginate { true | false }

Specify false to disable paginating CLI command output, and true to enable.

Must be either "false" or "true".

Usage Guidelines Use this command to paginate the command output.

quit

Exits the management session.

Command Modes Exec

Syntax Description `quit`

Usage Guidelines Use this command to exit the management session.

screen-length

Configures the number of rows of text that the terminal screen displays.

Command Modes Exec

Syntax Description `screen-length number_of_rows`

number_of_rows

Specify the number of rows.

Must be an integer.

Usage Guidelines Use this command to configure the number of rows that the terminal screen displays.

screen-width

Configures the number of columns that the terminal screen displays.

Command Modes Exec

Syntax Description `screen-width number_of_columns`

number_of_columns

Specify the number of columns.

Must be an integer.

Usage Guidelines Use this command to configure the number of columns that the terminal screen displays.

send

Sends messages to the terminal of a specific user or all users.

Command Modes Exec

Syntax Description **send** *user message*

user

Specify the user to whom the message must be sent.

Must be a string. Select from the possible completions options.

message

Specify the message that must be sent.

Must be a string.

Usage Guidelines Use this command to send messages to the terminal of a specific user or to all users.

show

Displays the system information.

Command Modes Exec

Syntax Description **show** *system_component*

system_component

Specify the component to view the information.

Must be a string. Select from the possible completion options.

Usage Guidelines Use this command to view the system information.

show-defaults

Configures whether to display default values when showing the configuration.

Command Modes Exec

Syntax Description **show-defaults { false | true }**

show-defaults { false | true }

Specify whether to display or hide default values. To hide select false, to display select true.

Must be either "false" or "true".

Usage Guidelines Use this command to view default values when viewing the configuration commands.

smiuser add-group

Configures the SMI group parameters.

Command Modes Exec

Syntax Description **smiuser add-group groupname** *group_name*

groupname *group_name*

Specify the group name in PAM.

Must be a string.

Usage Guidelines Use this command to configure the SMI group parameters.

smiuser add-user

Configures the SMI user account parameters.

Command Modes Exec

Syntax Description **smiuser add-user username** *username* **password** *password*

username *username*

Specify the username.

Must be a string.

password *password*

Specify the user password.

Must be a string.

Usage Guidelines Use this command to configure the smiuser parameters.

smiuser assign-user-group

Assigns the SMI user group.

Command Modes Exec

Syntax Description **smiuser assign-user-group groupname** *group_name* **username** *username*

username *username*

Specify the user name in PAM.

Must be a string.

groupname *group_name*

Specify the group name in PAM.

Must be a string.

Usage Guidelines Use this command to assign the SMI user group.

smiuser change-password

Allows resetting the SMI password.

Command Modes Exec

Syntax Description **smiuser change-password { username** *username* **| current_password** *current_password* **| new_password** *new_password* **| confirm_password** *new_password* **| password_expire_days** *expire_days* **}**

username *username*

Specify the username.

Must be a string.

current_password *current_password*

Specify the current password.

Must be a string.

new_password *new_password*

Specify the new password.

Must be a string.

confirm_password *new_password*

Confirm the new password.

Must be a string.

password_expire_days *expire_days*

Specify the number of days before password expires.

Must be an integer.

Usage Guidelines Use this command to reset the SMI password.

smiuser change-password-age

Configures the number of days before which the password expires.

Command Modes Exec

Syntax Description **smiuser change-password-age [username***username*|**password_expire_days***expire_days*]

username *username*

Specify the username.

Must be a string.

password_expire_days *expire_days*

Specify the number of days before which the password expires.

Must be an integer.

Usage Guidelines Use this command to configure the number of days before which the password expires.

smiuser change-self-password

Resets the SMI user accounts self-password.

Command Modes Exec

Syntax Description **smiuser change-self-password { current_password** *current_password* **| new_password** *new_password* **| confirm_password** *new_password* **| password_expire_days** *expire_days* **}**

current_password *current_password*

Specify the current password.

Must be a string.

new_password *new_password*

Specify the new password.

Must be a string.

confirm_password *new_password*

Confirm the new password.

Must be a string.

password_expire_days *expire_days*

Specify the number of days before which the password expires.

Must be an integer.

Usage Guidelines Use this command to reset the SMI user accounts self-password.

smiuser delete-group

Deletes the SMI group.

Command Modes Exec

Syntax Description **smiuser delete-group groupname** *group_name*

groupname *group_name*

Specify the group name.

Must be a string.

Usage Guidelines Use this command to delete the SMI user group.

smiuser delete-user

Deletes the SMI user.

Command Modes Exec

Syntax Description **smiuser delete-user username** *username*

username *username*

Specify the username.

Must be a string.

Usage Guidelines Use this command to delete the SMI user.

smiuser show-user

Displays the SMI user details.

Command Modes Exec

Syntax Description **smiuser show-user username** *username*

username *username*

Specify the username.

Must be a string.

Usage Guidelines Use this command to display the SMI user details.

smiuser unassign-user-group

Configures the SMI user's unassign user group.

Command Modes Exec

Syntax Description **smiuser unassign-user-group groupname** *groupname_pam* **username** *username_pam*

groupname *groupname_pam*

Specify the groupname in PAM.

Must be a string.

username *username_pam*

Specify the username in PAM.

Must be a string.

Usage Guidelines Use this command to configure the SMI user's unassign user group.

smiuser update-password-length

Configures the minimum password length.

Command Modes Exec

Syntax Description **smiuser update-password-length length** *password_length*

length *password_length*

Specify the minimum password length.

Must be an integer.

Usage Guidelines Use this command to configure the minimum password length.

subscriber

Configures the subscriber parameters.

Command Modes Exec

Syntax Description **subscriber session [imsi** *imsi_value* **| msisdn** *msisdn_value* **]**

imsi *imsi_value*

Specify the IMSI value.

Must be an integer.

msisdn *msisdn_value*

Specify the MSISDN value.

Must be an integer.

Usage Guidelines Use this command to configure the subscriber parameters.

system ops-center

Suspends the ops center diagnostics synching process.

Command Modes Exec

Syntax Description **system ops-center stop**

ops-center stop

Specify to stop the synching process.

Must be a string.

Usage Guidelines Use this command to suspend the ops center diagnostics synching process.

system sync

Configures automatic synching.

Command Modes Exec

Syntax Description **system ops-center stop**

synch { start | stop }

Specify to start or stop the synching process.

Must be either "start" or "stop".

Usage Guidelines Use this command to configure automatic synching.

system upgrade

Enforces the product upgrade.

Command Modes Exec

Syntax Description `system upgrade`

Usage Guidelines Use this command to enforce the product upgrade.

system uuid-override

Enforce the UUID to a new value.

Command Modes Exec

Syntax Description `system uuid-override new-uuid` *uid*

new-uuid *uid*

Specify the ID Token to register the agent with.

Must be a string.

Usage Guidelines Use this command to enforce the UUID to a new value.

system ops-center-debug

Configures the Ops Center debugging process.

Command Modes Exec

Syntax Description `system ops-center-debug { start | stop }`

ops-center-debug { start | stop }

Specify to start or stop the ops-center debugging process.

Must be either "start" or "stop".

Usage Guidelines Use this command to configure the Ops Center debugging process.

terminal

Configures the terminal parameters.

Command Modes Exec

Syntax Description **terminal** *terminal_type*

terminal_type

Specify the terminal type.

Must be one of the following:

- ansi
- generic
- linux
- vt100
- xterm

Usage Guidelines Use this command to configure the terminal parameters.

timestamp

Enables or disables the timestamp parameters.

Command Modes Exec

Syntax Description **timestamp { enable | disable }**

timestamp { enable | disable }

Specify the configuration to enable or disable the timestamp display.

Usage Guidelines Use this command to enable or disable the timestamp parameters.

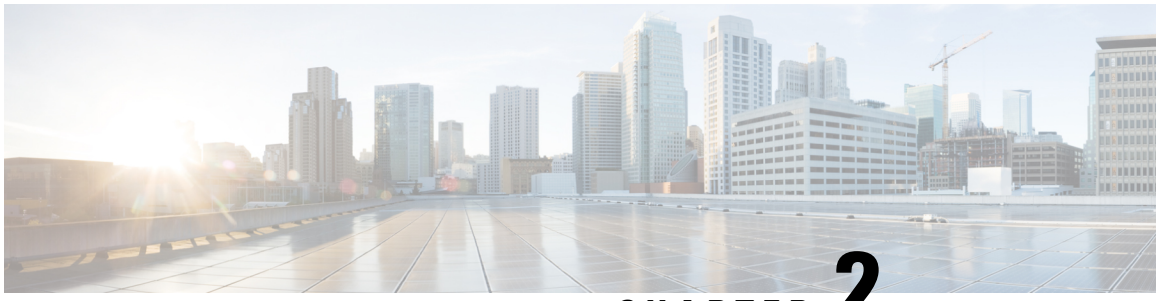
who

Displays information on currently logged on users.

Command Modes Exec

Syntax Description **who**

Usage Guidelines Use this command to view information on currently logged on users. The command output displays the Session, User, Context, From, Protocol, Date, and Mode information.



CHAPTER 2

Mobile Policy Common Commands

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cluster

Configures the cluster information.

Command Modes Exec > Global Configuration

Syntax Description **`cluster { cluster-id`** *`cluster_id`* **`| system-id`** *`system_id`*`}`

cluster-id *cluster_id*

Specify the cluster ID.

Must be a string.

Default Value: cluster-1.

system-id *system_id*

Specify the system ID.

Must be a string.

Default Value: system-1.

Usage Guidelines Use this command to configure cluster information.

cps-license

Configures CPS licensing.

Command Modes Exec > Global Configuration

Syntax Description **cps-licence** *license_name* **encrypted-key** *encrypted_key*

encrypted-key *key*

Specify the encrypted key.

Must be a string.

feature-name *feature_name*

Specify the feature name.

Must be a string.

Usage Guidelines Use this command to configure PCF license.

db

Configures database setup.

Command Modes Exec > Global Configuration

Syntax Description **db { balance shard count** *shard_count* **| global-settings { db-replica** *replica_count* **| timers { catchup-timeout-millis** *catchup_timeout_in_ms* **| election-timeout-millis** *election_timeout_in_ms* **| heartbeat-interval-millis** *heartbeat_interval_in_ms* **} } | spr shard-count** *shard_count*}

Usage Guidelines Use this command to configure the database setup.

db balance

Configures the Balance database.

Command Modes Exec > Global Configuration

Syntax Description **`db balance shard-count`** *`balance_db_shard_count`*

shard-count *balance_db_shard_count*

Specify the Balance database's shard count.

Must be an integer.

Default Value: 1.

Usage Guidelines Use this command to configure the Balance database.

Example

The following command configures the Balance database's shard count to 1:

```
db balance shard-count 1
```

db global-settings

Configures global DB settings.

Command Modes Exec > Global Configuration

Syntax Description **`global-settings db-replica`** *`replica_count`*

db-replica *replica_count*

Specify the global DB replica count.

Must be an integer.

Default Value: 3.

volume-storage-class *volume_storage_class*

Specify the volume storage class if use-volume-claims enabled is enabled.

Must be one of the following:

- **default**
- **local**

Default Value: default.

Usage Guidelines Use this command to configure the global DB settings.

db global-settings timers

Configures global MongoDB timers.

Command Modes Exec > Global Configuration

Syntax Description **db global-settings timers { catchup-timeout-millis** *catchup_timeout* **| election-timeout-millis** *election_timeout* **| heartbeat-interval-millis** *heartbeat_interval*}

catchup-timeout-millis *catchup_timeout*

Specify the global catchup timeout period, in milliseconds.

Must be an integer.

Default Value: 2000.

election-timeout-millis *election_timeout*

Specify the global election timeout period, in milliseconds.

Must be an integer.

Default Value: 2000.

heartbeat-interval-millis *heartbeat_interval*

Specify the global heartbeat interval period, in milliseconds.

Must be an integer.

Default Value: 300.

Usage Guidelines Use this command to configure the global MongoDB timers.

db spr

Configures the SPR database.

Command Modes Exec > Global Configuration

Syntax Description **db spr shard-count** *shard_count*

shard-count *shard_count*

Specify the SPR database's shard count.

Must be an integer.

Default Value: 1.

Usage Guidelines Use this command to configure the SPR database.

Example

The following command configures the SPR database's shard count to 20:

```
db spr shard-count 20
```

debug

Configures the debug parameters.

Syntax Description **debug { logging { default-level** *logging_level* **| logger** *logger_name* **} | tracing { jaeger agent udp { host** *host_address* **| port** *port_number* **} | type }}**

Usage Guidelines Use this command to configure debug information.

debug logging

Configures the logging parameters.

Command Modes Exec > Global Configuration

Syntax Description **default-level [debug** *debug* **| error** *error* **| info** *info* **| off** *off* **| trace** *trace* **| warn** *warn* **]**

Usage Guidelines Use this command to configure the logging parameters.

debug splunk

Configures the Splunk parameters.

Command Modes Exec > Global Configuration

Syntax Description **debug splunk { batch-count** *event_count* **| batch-interval-ms** *batch_interval* **| batch-size-bytes** *max_batch* **| hec-token** *splunk_hec* **| hec-url** *port_splunk*}

Usage Guidelines Use this command to configure the Splunk parameters.

debug tracing

Configures the tracing parameters.

Command Modes Exec > Global Configuration

Syntax Description **debug tracing [jaegar agent** *agent* **udp [host** *host_name port_number* **] | type** *tracing_type* **]**

Usage Guidelines Use this command to configure the tracing parameters.

features

Configures the control configuration for the application features.

Command Modes Exec > Global Configuration

Syntax Description **features { activemq cluster-ip** *cluster_ip_address* **| patching ingress-enabled { false | true }}**

Usage Guidelines Use this command configure the control configuration for the application features.

Example

The following command configures the control configuration for the application feature:

```
features { activemq cluster-ip 122.12.122.11 | patching ingress-enabled true }
```

features activemq

Configures the ActiveMQ parameters.

Command Modes Exec > Global Configuration

Syntax Description **features activemq cluster-ip** *ip_address*

cluster-ip *ip_address*

Specify the IP address of the cluster.

Usage Guidelines Use this command to configure the ActiveMQ parameters.

features patching

Configures the Ingress API.

Command Modes Exec > Global Configuration

Syntax Description **features patching ingress-enabled { false | true}**

ingress-enabled { false | true}

Specify to enable or disable patching ingress, not secured.

Must be one of the following:

- **false**
- **true**

Default Value: false.

Usage Guidelines Use this command to enable or disable Ingress API.

ldap

Displays the LDAP connections.

Command Modes Exec

Syntax Description **show ldap connection-status**

replicas *replica_count*

Specify the replica count.

Must be an integer.

Default Value: 1.

repository *helm_repository*

Specify to override Helm repository.

Usage Guidelines Use this command to view LDAP connection information.

Example

The following command displays the LDAP connections:

```
show ldap connection-status
```

ldap connection-status

Displays the LDAP connections for the SPR lookup.

Command Modes Exec

Syntax Description **show ldap connection-status server-set { metric** *metric_type* **| value** *metric_value* **{ timestamp** *timestamp_value* **}}**

metric *metric_type*

Specify the metric type

Must be a string.

serverset *server_set_name*

Specify the LDAP server set name.

Must be a string.

value *metric_value*

Specify the metric value

Must be a string.

Usage Guidelines Use this command to display LDAP connections for the SPR lookup.

ldap server-set

Configures the LDAP server set parameters.

Command Modes Exec > Global Configuration

Syntax Description

```
ldap server-set server_name [ add-child-on-parent-create-failure { false |
true } | add-request-attribute attribute_name attribute_value | binds-per-second
 binds_count | connection connection_address port_number {auto-reconnect { false
| true } | bind-timeout-ms bind_timeout_ms | connection-rule FASTEST/ROUND_ROBIN
 | priority priority_number | timeout-ms timeout } |
ignore-ldap-error-result-codes result_code | initial-connections
initial_connections | max-connections max_connections |
max-failover-connection-age-ms max_failover_connections |
missing-attribute-result-code attribute_code |
number-consecutive-timeouts-for-bad-connection count_timeout | retry-count
retry_count | retry-timer-ms retry_time | use-asynchronous-operations { false
 | true } ]
```

add-child-on-parent-create-failure { false | true}

Specify to enable or disable additions of child on parent creation failure.

Must be one of the following:

- **false**
- **true**

Default Value: true.

binds-per-second *binds_count*

Specify the number of binds per second.

Must be of type decimal64, with 2 fraction digits.

Default Value: 0.20.

ignore-ldap-error-result-codes *result_code*

Specify to ignore LDAP error result codes.

Must be an integer.

initial-connections *initial_connections*

Specify the initial connections.

Must be an integer.

Default Value: 1.

max-connections *max_connections*

Specify the maximum number of connections.

Must be an integer.

Default Value: 10.

max-failover-connection-age-ms *max_failover_connections*

Specify the maximum failover connection age in milliseconds.

Must be an integer.

Default Value: 60000.

missing-attribute-result-code *result_code*

Specify missing attribute result code.

Must be an integer.

Default Value: 0.

number-consecutive-timeouts-for-bad-connection *count_timeouts*

Specify the number of consecutive timeouts for bad connection.

Must be an integer.

Default Value: -1.

retry-count *retry_count*

Specify the retry count.

Must be an integer.

Default Value: 3.

retry-timer-ms *retry_timeout*

Specify the retry timer timeout period in milliseconds.

Must be an integer.

Default Value: 50.

server-set *server_name*

Specify the name of the LDAP server set.

Must be a string.

use-asynchronous-operations { false | true}

Specify to enable or disable using LDAP asynchronous operations.

Must be one of the following:

- **false**
- **true**

Default Value: true.

Usage Guidelines Use this command to configure LDAP server set parameters.

ldap server-set add-request-attribute

Configures the request attribute.

Command Modes Exec > Global Configuration

Syntax Description **add-request-attribute** *attribute_name attribute_value*

attribute_name

Specify the request attribute name.

Must be a string.

attribute_value

Specify the request attribute value.

Must be a string.

Usage Guidelines Use this command to configure the request attribute.

ldap server-set connection

Configure the LDAP connection parameters.

Command Modes Exec > Global Configuration

Syntax Description **connection** *ldap_server_address port_number* **{ auto-reconnect { false | true } | bind-timeout-ms** *bind_timeout* **| connection-rule** *connection_rule* **| priority** *priority_number* **| timeout-ms** *timeout*}

auto-reconnect { false | true}

Specify to enable or disable auto reconnect to LDAP hosts.

Must be one of the following:

- **false**
- **true**

Default Value: true.

bind-timeout-ms *bind_timeout*

Specify the timeout period for bind calls to LDAP in milliseconds.

Must be an integer.

Default Value: 2000.

connection-rule *connection_algorithm*

Specify the connection algorithm.

Must be one of the following:

- **FASTEST**
- **ROUND_ROBIN**

Default Value: ROUND_ROBIN.

connection *port_number*

Specify the port number of the LDAP server.

Must be an integer.

priority *priority_number*

Specify the priority of the LDAP server set.

Must be an integer.

Default Value: 100.

timeout-ms *timeout*

Specify the timeout period for calls to LDAP in milliseconds.

Must be an integer.

Default Value: 200.

ldap_server_address

Specify the address of the LDAP server.

Must be a string.

Usage Guidelines Use this command to configure the LDAP connection parameters.

ldap server-set health-check

Configures the health check parameters.

Command Modes Exec > Global Configuration

Syntax Description **health-check { attributes** *attribute_string* **| dn** *health_check_dn* **| filter** *filter_string* **| interval-ms** *interval_value*}

attributes *health_check_attributes*

Specify the health check attributes.

Must be a string.

dn *health_check_dn*

Specify the health check DN.

Must be a string.

filter *health_check_filter*

Specify the health check filter.

Must be a string.

interval-ms *health_check_interval*

Specify the health check interval in milliseconds.

Must be an integer.

Default Value: 5000.

Usage Guidelines Use this command to configure the health check parameters.

ldap server-set search-user

Enables search user for LDAP.

Command Modes Exec > Global Configuration

Syntax Description **search-user { [dn** *user_dn* **] [password** *user_password* **]}**

dn *user_dn*

Specify the user DN.

Must be a string.

password *user_password*

Specify the user password.

Usage Guidelines Use this command to enable search user for LDAP.

testing

Configures the testing feature.

Command Modes Exec > Global Configuration

Syntax Description **`testing { external-mongo-access { admin | balance | session | spr } | subversion-ingress-enabled | zing-compiler-options | zing-memory } { ip`** *`ip_address`* **`| port`** *`port_number`*`}`

code-coverage-enabled { false | true}

Specify to enable or disable code coverage reporting with jacoco.

Must be one of the following:

- **false**
- **true**

Default Value: false.

development-mode-enabled { false | true}

Specify to enable or disable development mode.

Must be one of the following:

- **false**
- **true**

Default Value: false.

enforce-affinity-rules { false | true}

Specify to enable or disable anti affinity rules for pod scheduling.

Must be one of the following:

- **false**
- **true**

Default Value: true.

ldap-grpc-enabled { false | true}

Specify to enable or disable redis IPC communication between ldap-ep to engine.

Must be one of the following:

- **false**
- **true**

Default Value: false.

subversion-ingress-enabled { false | true}

Specify if the subversion ingress is enabled.

Must be one of the following:

- **false**
- **true**

Default Value: false.

zing-compiler-options *compiler_options*

Specify the compiler options for Zing.

Must be one of the following:

- **C2**
- **Falcon**

Default Value: C2.

Usage Guidelines Use this command to configure the testing feature.

testing tls-handshake

Configures the TLS/SSL testing configuration.

Command Modes Exec > Global Configuration

Syntax Description `tls-handshake`

alpn-disabled { false | true}

Specify to enable or disable ALPN extenstion in HTTP2 TLS ClientHello handshake.

Must be one of the following:

- **false**
- **true**

Default Value: false.

debug-enabled { false | true}

Specify to enable or disable TLS/SSL debug logs.

Must be one of the following:

- **false**
- **true**

Default Value: false.

trust-all { false | true}

Specify to enable or disable Keystore certificate validation for client.

Must be one of the following:

- **false**
- **true**

Default Value: false.

Usage Guidelines Use this command to configure the TLS/SSL testing configuration.

testing zing-memory

Configures the storage for Zing data.

Command Modes Exec > Global Configuration

Syntax Description **testing zing-memory [datastore** *datastore_zing_memory* **| diameter** *diameter_zing_memory* **| engine** *engine_zing_memory* **| ldap** *ldap_zing_memory* **]**

datastore *datastore_zing_memory*

Specify the datastore Zing memory. For example, -Xmx4g/-Xmx8g.

Must be a string.

Default Value: -Xmx8g.

diameter *diameter_zing_memory*

Specify the Diameter Zing memory. For example, -Xmx4g/-Xmx8g.

Must be a string.

Default Value: -Xmx8g.

engine *engine_zing_memory*

Specify the engine Zing memory. For example -Xmx4g/-Xmx8g.

Must be a string.

Default Value: -Xmx8g.

ldap *ldap_zing_memory*

Specify the LDAP endpoint. For example, -Xmx4g/-Xmx8g.

Must be a string.

Default Value: -Xmx8g.

Usage Guidelines Use this command to configure the storage for Zing data.

zing

Configures Zing for the engine.

Command Modes Exec > Global Configuration

Syntax Description `zing enable { false | true}`

enable { false | true}

Specity to enable or disable Zing Java Virtual Machine.

Must be one of the following:

- **false**
- **true**

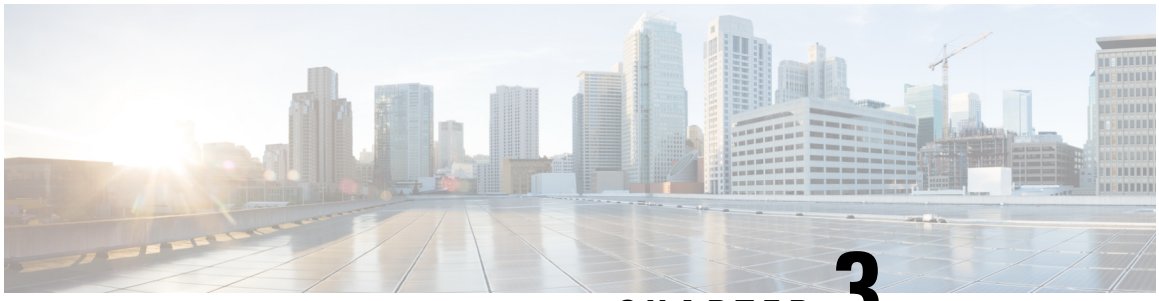
Default Value: false.

Usage Guidelines Use this command to configure Zing for the engine.

Example

The following command configures Zing for the engine:

```
zing enable true
```



CHAPTER 3

Mobile Policy CDL Client Commands

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datastore external-endpoints

Configures the list of external datastore endpoints.

Command Modes

Exec > Global Configuration

Syntax Description

`datastore external-endpoints` *`external_endpoint`*

external-endpoints *external_endpoints*

Specify the external datastore endpoints.

port *port_number*

Specify the port number.

rating *rating*

Specify the rating for the datastore endpoint (higher the better).

Must be an integer.

Default Value: 0.

Usage Guidelines

Use this command to configure the list of external datastore endpoints.

datastore external-endpoints connection-settings

Configures the connection setting parameters.

Command Modes Exec > Global Configuration

Syntax Description **datastore external-endpoints** *external_endpoints* **connection-settings { channel** *channel_count* **| keep-alive { keep-alive-time-ms** *keep_alive_time* **| keep-alive-timeout-ms** *keep_alive_timeout* **} | timeout-ms** *timeout_in_ms* **| port** *port_number* **| rating** *rating*}

timeout-ms *timeout_ms*

Specify the timeout period in milliseconds.

Must be an integer.

Usage Guidelines Use this command to configure connection settings.

datastore external-endpoints connection-settings channel

Configures the number of parallel gRPC channels to open towards each datastore endpoint.

Command Modes Exec > Global Configuration

Syntax Description **datastore { external-endpoints** *external_endpoints* **| primary_enpoint** *primary_endpoint* **} connection-settings channel count** *channel_count*

count *channel_count*

Specify the number of parallel gRPC channels to open towards each datastore endpoint.

Must be an integer.

Usage Guidelines Use this command to configure the number of parallel gRPC channels to open towards each datastore endpoint.

Example

The following command configures the channel count to 10:

```
datastore external-endpoints sample1 connection-settings channel count 10
```

datastore external-endpoints connection-settings keep-alive

Configures keep-alive parameters.

Command Modes Exec > Global Configuration

Syntax Description **datastore { external-endpoints** *external_endpoints* **| primary_enpoint** *primary_endpoint* **} connection-settings keep-alive { keep-alive-time-ms** *keep_alive_time* **| keep-alive-timeout-ms** *keep_alive_timeout*}

keep-alive-time-ms *keep_alive_time*

Specify the idle timeout in milliseconds, after which keepalive notification is sent.

Must be an integer.

keep-alive-timeout-ms *keep_alive_timeout*

Specify the idle timeout period in milliseconds, after which keepalive probe is initiated.

Must be an integer.

Usage Guidelines Use this command to configure the keep-alive parameters.

datastore primary-endpoint

Configures the primary (cluster local) datastore parameters.

Command Modes Exec > Global Configuration

Syntax Description **datastore primary-endpoint connection-settings { channel** *channel_count* **| keep-alive { keep-alive-time-ms** *keep_alive_time*| **keep-alive-timeout-ms** *keep_alive_timeout* **| timeout-ms } | timeout-ms** *timeout_in_ms*}

Usage Guidelines Use this command to configure the primary datastore configuration.

datastore primary-endpoint connection-settings

Configures the datastore connection settings.

Command Modes Exec > Global Configuration

Syntax Description **datastore { external-endpoints** *external_endpoints* **| primary_endpoint** *primary_endpoint* **} connection-settings**

timeout-ms *timeout_ms*

Specify the timeout period in milliseconds.

Must be an integer.

Usage Guidelines Use this command to configure the datastore connection settings.

datastore primary-endpoint connection-settings channel

Configures the number of parallel gRPC channels to open towards each datastore endpoint.

Command Modes

Exec > Global Configuration

Syntax Description

datastore { external-endpoints *external_endpoints* **| primary_enpoint** *primary_endpoint* **} connection-settings channel count** *channel_count*

count *channel_count*

Specify the number of parallel gRPC channels to open towards each datastore endpoint.

Must be an integer.

Usage Guidelines

Use this command to configure the number of parallel gRPC channels to open towards each datastore endpoint.

Example

The following command configures the channel count to 10:

```
datastore external-endpoints sample1 connection-settings channel count 10
```

datastore primary-endpoint connection-settings keep-alive

Configures keep-alive parameters.

Command Modes

Exec > Global Configuration

Syntax Description

datastore { external-endpoints *external_endpoints* **| primary_enpoint** *primary_endpoint* **} connection-settings keep-alive { keep-alive-time-ms** *keep_alive_time* **| keep-alive-timeout-ms** *keep_alive_timeout*}

keep-alive-time-ms *keep_alive_time*

Specify the idle timeout in milliseconds, after which keepalive notification is sent.

Must be an integer.

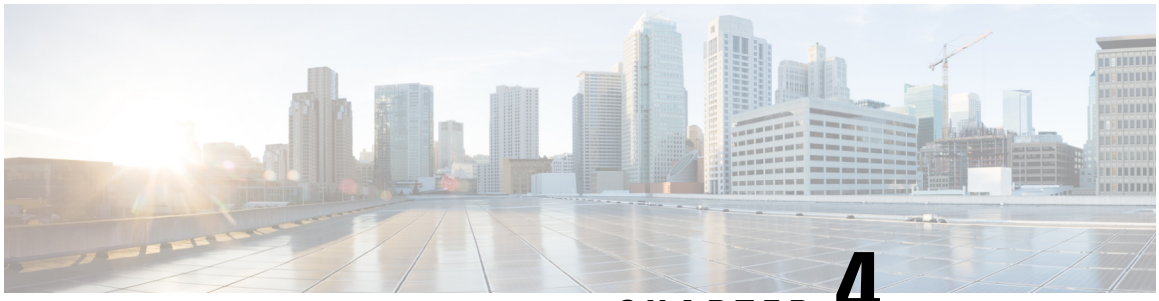
keep-alive-timeout-ms *keep_alive_timeout*

Specify the idle timeout period in milliseconds, after which keepalive probe is initiated.

Must be an integer.

Usage Guidelines

Use this command to configure the keep-alive parameters.



CHAPTER 4

Mobile Policy Diameter Commands

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- diameter application, on page 45
- diameter group, on page 46
- diameter group stack, on page 47
- diameter group stack diameter-engine alt-engines, on page 48
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- diameter grpc channel, on page 51
- diameter next-hop-route next-hop-host, on page 52
- diameter settings timeouts-ms, on page 52

diameter

Displays the configured Diameter stack definition.

Command Modes

Exec

Syntax Description

```
show diameter
```

Usage Guidelines

Use this command to view the configured Diameter stack definition.

Example

The following command displays the configured Diameter stack definition:

```
show diameter peer-status
```

diameter application

Configures the Diameter application definition.

Command Modes Exec > Global Configuration

Syntax Description **diameter application** *application_name* **{ application-id** *application_id* **| tgpp-application { false | true } | vendor** *vendor_id*}

application-id *application_id*

Specify the application ID.

Must be an integer.

application *application_name*

Specify the application abbreviation. For example, gx.

Must be a string.

tgpp-application { false | true}

Specify whether the application is a 3GPP application.

Must be one of the following:

- **false**
- **true**

Default Value: false.

vendor *vendor_id*

Specify the vendor IDs.

Must be an integer.

Usage Guidelines Use this command to configure the Diameter application definition.

diameter group

Configures the Diameter stack group parameters.

Command Modes Exec > Global Configuration

Syntax Description **diameter group [group** *group_name* **| mode** *mode* **| repository** *repository_name* **| stack** *stack_name* **]**

group *group_name*

Specify the group and stack name.

Must be a string in the pattern [a-zA-Z][a-zA-Z0-9-]*.

mode *mode*

Specify the mode in which the Diameter stack must run.

Must be one of the following:

- **client**
- **server**

Default Value: client.

repository *repository_name*

Specify the helm repository.

Usage Guidelines Use this command to configure the Diameter stack group.

diameter group stack

Configures the Diameter stack definition.

Command Modes Exec > Global Configuration

Syntax Description **diameter group** *group_name* **stack** *stack_name* **{ application** *application_name* **| bind-ip** *bind_ip_address* **| bind-port** *bind_port_number* **| fqdn** *fqdn_name* **| realm** *realm* **| peer-host** *peer_host_name* **| peer-port** *peer_port_number* **| peer-realm** *peer_realm* **| node-host** *node_host*}

application *application_name*

Specify the Diameter application.

bind-ip *bind_ip_address*

Specify the IP address to use in the CER or CEA message.

bind-port *bind_port_number*

Specify the port number to bind the server.

Default Value: 3868.

fqdn *fqdn*

Specify the fully qualified domain name (FQDN) to use in CER or CEA messages.

Must be a string.

node-host *node_host*

Specify the node host to start the stack on.

Must be a string.

peer-host *peer_host_name*

Specify the remote peer host address or FQDN.

Must be a string.

peer-port *peer_port_number*

Specify the peer port number.

Default Value: 3868.

peer-realm *peer_realm*

Specify the remote peer realm.

Must be a string.

realm *realm*

Specify the realm to use in CER or CEA messages.

Must be a string.

replicas *replica_count*

Specify the replica count.

Must be an integer.

Default Value: 1.

stack *stack_name*

Specify the stack name.

Must be a string.

Usage Guidelines Use this command to configure the Diameter stack definition.

diameter group stack diameter-engine alt-engines

Configures the alternate Diameter engine parameters.

Command Modes Exec > Global Configuration > Diameter Group Configuration > Stack Configuration

Syntax Description **`diameter-engine alt-engines check-session-exists { false | true}`**

check-session-exists { false | true}

Specify whether to check if the session exists on the alternate-engines before forwarding requests.

Must be one of the following:

- **false**
- **true**

Default Value: false.

Usage Guidelines Use this command to configure the alternate Diameter engine parameters.

diameter group stack diameter-engine alt-engines primary

Configures the primary Diameter Engine parameters.

Command Modes Exec > Global Configuration > Diameter Group Configuration > Stack Configuration

Syntax Description **primary svc-name** *service_name* **port** *port_number*

port *port_number*

Specify the port number exposed by the external service.

Default Value: 8884.

svc-name *service_name*

Specify the external service name that represents the Diameter engine.

Usage Guidelines Use this command to configure the primary Diameter Engine parameters.

diameter group stack diameter-engine alt-engines secondary

Configures the secondary Diameter Engine parameters.

Command Modes Exec > Global Configuration > Diameter Group Configuration > Stack Configuration

Syntax Description **secondary svc-name** *service_name* **port** *port_number*

port *port_number*

Specify the port number exposed by the external service.

Default Value: 8884.

svc-name *service_name*

Specify the external service name that represents the Diameter engine.

Usage Guidelines Use this command to configure the secondary Diameter Engine parameters.

diameter group stack grpc ext-svc

Configures the external gRPC service parameters for the Diameter interface.

Command Modes Exec > Global Configuration

Syntax Description **diameter grpc [port** *port_number* **| ip** *ip_address* **]**

ip *ip_address*

Specify the gRPC server's IP address.

port *port_number*

Specify the port number to bind the server.

Default Value: 8868.

Usage Guidelines Use this command to configure the external gRPC service parameters for the Diameter interface.

diameter group stack settings timeouts-ms

Configures the timeout parameters for the Diameter interface.

Command Modes Exec > Global Configuration

Syntax Description **diameter settings timeout-ms [cea** *cea_timeout* **| dpa** *dpa_timeout* **| dwa** *dwa_timeout* **| iac** *inactivity_timeout* **| request** *request_timeout* **| stop** *timeout_stop_diameter* **]**

cea *cea_exchange_timeout*

Specify the timeout duration for completing the CEA exchange in milliseconds.

Must be an integer.

Default Value: 10000.

dpa *dpa_timeout*

Specify the DPA timeout duration in milliseconds.

Must be an integer.

Default Value: 10000.

dwa *dwa_timeout*

Specify the DWA timeout duration in milliseconds.

Must be an integer.

Default Value: 10000.

iac *inactivity_timeout*

Specify the inactivity timeout duration in milliseconds.

Must be an integer.

Default Value: 5000.

request *request_timeout*

Specify the request timeout duration in milliseconds.

Must be an integer.

Default Value: 1750.

stop *stop_timeout*

Specify the timeout duration for stopping the Diameter interface in milliseconds.

Must be an integer.

Default Value: 9000.

Usage Guidelines Use this command to configure the timeout duration for the Diameter interface.

Example

The following command configures the timeout duration for the Diameter interface:

```
diameter settings timeout-ms [ cea 10000 | dpa 10000 | dwa 10000 | iac 5000 | request 1750
 | stop 9000 ]
```

diameter grpc

Configures the global gRPC settings.

Command Modes Exec > Global Configuration

Syntax Description **`diameter grpc channel count`** *`count`*

Usage Guidelines Use this command to configure the global gRPC settings.

Example

The following command configures the global gRPC settings:

```
diameter grpc channel count 100
```

diameter grpc channel

Configures the gRPC channels to open towards the server.

Command Modes Exec > Global Configuration

Syntax Description **`diameter grpc channel count`** *`channel_count`*

channel *channel_count*

Specify the number of channel to open towards the server.

Must be an integer.

Default Value: 10.

Usage Guidelines Use this command to configure the gRPC channels to open towards the server.

diameter next-hop-route next-hop-host

Configures the next-hop host name.

Command Modes Exec > Global Configuration

Syntax Description **next_hop_realm rating** *rating*

next-hop-host-name *hostname_list*

Specify the DRA hosts name list as received in the Origin-Host AVP in CER or CEA message.

Must be a string.

rating *rating*

Specify the rating that determines the priority.

Must be an integer.

Default Value: 0.

Usage Guidelines Use this command to configure the next-hop host name.

Example

The following command configures the next-hop host name:

```
next_hop_realm rating 2
```

diameter settings timeouts-ms

Configures the timeout parameters for the Diameter interface.

Command Modes Exec > Global Configuration

Syntax Description **diameter settings timeout-ms [cea** *cea_timeout* **| dpa** *dpa_timeout* **| dwa** *dwa_timeout* **| iac** *inactivity_timeout* **| request** *request_timeout* **| stop** *timeout_stop_diameter* **]**

cea *cea_exchange_timeout*

Specify the timeout duration for completing the CEA exchange in milliseconds.

Must be an integer.

Default Value: 10000.

dpa *dpa_timeout*

Specify the DPA timeout duration in milliseconds.

Must be an integer.

Default Value: 10000.

dwa *dwa_timeout*

Specify the DWA timeout duration in milliseconds.

Must be an integer.

Default Value: 10000.

iac *inactivity_timeout*

Specify the inactivity timeout duration in milliseconds.

Must be an integer.

Default Value: 5000.

request *request_timeout*

Specify the request timeout duration in milliseconds.

Must be an integer.

Default Value: 1750.

stop *stop_timeout*

Specify the timeout duration for stopping the Diameter interface in milliseconds.

Must be an integer.

Default Value: 9000.

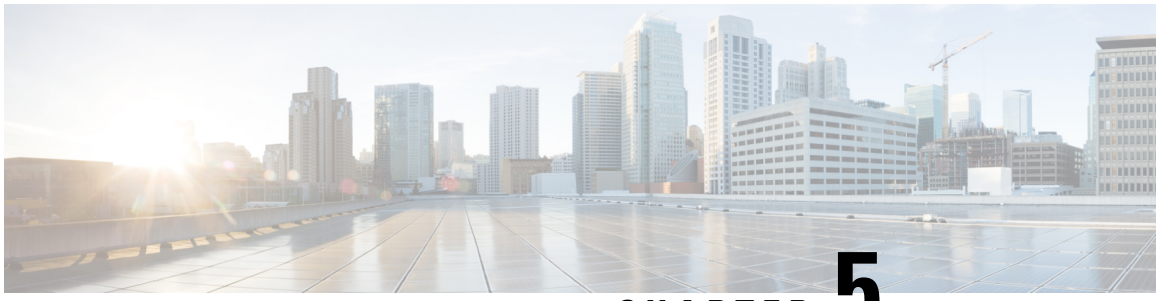
Usage Guidelines

Use this command to configure the timeout duration for the Diameter interface.

Example

The following command configures the timeout duration for the Diameter interface:

```
diameter settings timeout-ms [ cea 10000 | dpa 10000 | dwa 10000 | iac 5000 | request 1750
 | stop 9000 ]
```



CHAPTER 5

Mobile Policy Infrastructure Commands

- subversion, on page 55

subversion

Configures Subversion parameters.

Command Modes

Exec > Global Configuration

Syntax Description

`subversion { polling-interval-secs` *`monitor_svn_thread_polling_interval`* **`| max-data-chunk-size`** *`max_data_chunk_size`*`}`

max-data-chunk-size *max_data_chunk_size*

Specify the maximum chunk size, in bytes, to store in configmap.

Must be an integer in the range of 300000-550000.

Default Value: 550000.

polling-interval-secs *monitor_svn_thread_polling_interval*

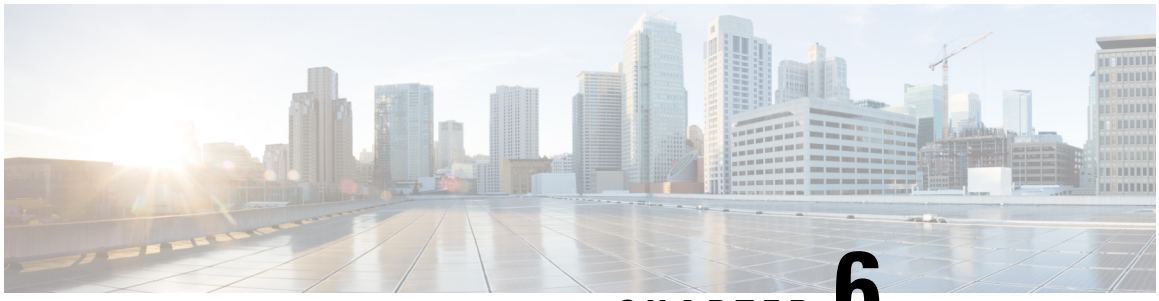
Specify the monitor-svn thread polling interval in seconds.

Must be an integer.

Default Value: 120.

Usage Guidelines

Use this command to configure the Subversion parameters.



CHAPTER 6

Mobile Policy LDAP Commands

- ldap-server-endpoint connect, on page 57
- ldap-server-endpoint health-check-attributes, on page 58
- ldap-server-endpoint health-check-filter, on page 58
- ldap-server-endpoint input-mapping, on page 59
- ldap-server-endpoint ldap-clients, on page 59
- ldap-server-endpoint output-mapping, on page 60

ldap-server-endpoint connect

Configures the LDAP Server connection parameters.

Command Modes

Exec > Global Configuration

Syntax Description

`ldap-server-endpoint connect [ bind-ip` *`bind_ip_address`* **`| binddn`** *`bind_dn`* **`| max-transactions`** *`max_tps`* **`| password`** *`password`* **`| port`** *`port_number`* **`| request-timeout`** *`request_timeout`* **`| replica`** *`replica_count`* **`]`**

bind-ip *bind_ip_address*

Specify the IP address to connect to the LDAP server.

binddn *bind_dn*

Specify the binding user to bind to the LDAP server.

Must be a string.

max-transactions *max_tps*

Specify the maximum TPS allowed.

Must be an integer.

Default Value: 200.

password *password*

Specify the binding user's password in plain text format.

port *port_number*

Specify the destination LDAP port to connect to the LDAP server.

Default Value: 9389.

replica *replica_count*

Specify the replica count.

Must be an integer.

Default Value: 1.

request-timeout *request_timeout*

Specify the request time out duration in milliseconds.

Must be an integer.

Default Value: 2000.

Usage Guidelines Use this command to configure the LDAP Server connection parameters.

ldap-server-endpoint health-check-attributes

Configures the response attributes and values for the health-check request.

Command Modes Exec > Global Configuration

Syntax Description **`ldap-server-endpoint health-check-attributes`** *`attribute_name`* **`value`** *`value`*

value *value*

Specify the LDAP attribute filter value.

Must be a string.

attribute_name

Specify the LDAP attribute filter name.

Must be a string.

Usage Guidelines Use this command to configure the response attributes and values for health-check request.

ldap-server-endpoint health-check-filter

Configures the health check filter parameters for the LDAP server endpoint.

Command Modes Exec > Global Configuration

Syntax Description **`ldap-server-endpoint health-check-filter`** *`attribute_name`* **`value`** *`value`*

value *value*

Specify the LDAP attribute filter value.

Must be a string.

attribute_name

Specify the LDAP attribute filter name.

Must be a string.

Usage Guidelines Use this command to configure the health check filter parameters.

ldap-server-endpoint input-mapping

Configures mapping for the LDAP search query filter name to Session lookup attribute.

Command Modes Exec > Global Configuration

Syntax Description **`ldap-server-endpoint input-mapping`** *`filter_name`* **`internal-lookup-key`** *`lookup_key`*

internal-lookup-key *lookup_key*

Specify the session lookup key.

Must be one of the following:

- **IMSI**
- **IP_ADDRESS**
- **MSISDN**

filter_name

Specify the LDAP query filter name.

Must be a string.

Usage Guidelines Use this command to configure the mapping for the LDAP search query filter name to Session lookup attribute.

ldap-server-endpoint ldap-clients

Configures the LDAP client credentials to bind to the server.

Command Modes Exec > Global Configuration

Syntax Description **`ldap-server-endpoint ldap-clients`** *`client`* **`password`** *`password`*

binddn *bind_dn*

Specify the binding user to bind to the LDAP server.

Must be a string.

password *password*

Specify the binding user's password in plain text format.

Usage Guidelines Use this command to configure the LDAP client credentials to bind to the server.

ldap-server-endpoint output-mapping

Configures the mapping for session lookup attributes to LDAP search response attributes.

Command Modes Exec > Global Configuration

Syntax Description **`ldap-server-endpoint output-mapping`** *`attribute_name`* **`input`** *`lookup_key`*

input *lookup_key*

Specify the session lookup key.

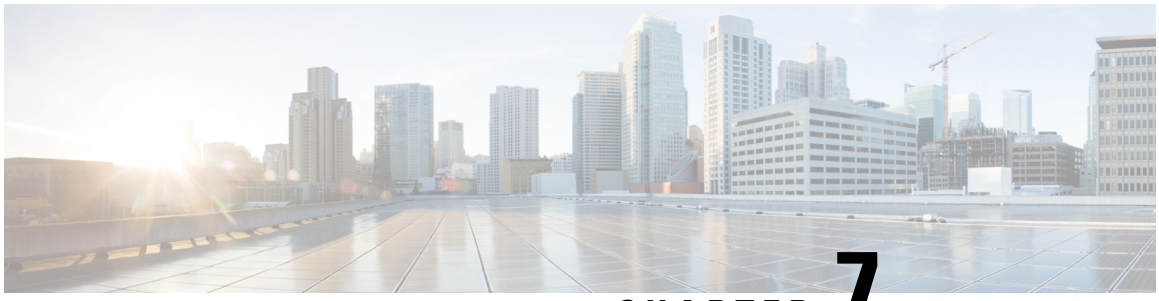
Must be a string.

ouput-mapping *attribute_name*

Specify the LDAP response attribute name.

Must be a string.

Usage Guidelines Use this command to configure the mapping for session lookup attributes to LDAP search response attributes.



CHAPTER 7

Mobile Policy PCF Commands

- advance-tuning, on page 61
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- rest-endpoint peer-status, on page 73
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advance-tuning

Configures advanced tuning parameters.

Command Modes Exec > Global Configuration

Syntax Description **advance-tuning { n7-stale-session-error-codes** *error_codes* **| redis-password** *redis_password*}

n7-stale-session-error-codes *error_codes*

Specify the comma-separated list of N7Notify stale session error codes.

Must be a string.

redis-password *redis_password*

Specify the Redis password.

Usage Guidelines

Use this command to configure advanced tuning parameters.

advance-tuning async-threading

Configures threading configuration for HTTP outgoing request from PCF.

Command Modes

Exec > Global Configuration

Syntax Description

advance-tuning async-threading { default-drop-oldest-when-full { false | true } | default-priority *default_priority* **| default-processing-threads** *processing_thread_number* **| default-queue-size** *default_queue_size* **| default-worker-threads** *default_number_worker_threads* **| request-timeout-ms** *request_timeout* **| thread-configuration** *service_name* **drop-oldest-when-full { false | true } | priority** *thread_priority* **| queue-size** *queue_size* **| threads** *thread_number*}

default-drop-oldest-when-full { false | true}

Specify to drop the oldest packet when queue is full.

Must be one of the following:

- **false**
- **true**

Default Value: false.

default-priority *default_priority*

Specify the default priority of thread.

Must be an integer.

Default Value: 5.

default-processing-threads *processing_thread_number*

Specify the default number of processing threads.

Must be an integer.

Default Value: 10.

default-queue-size *default_queue_size*

Specify the default size of the queue.

Must be an integer.

Default Value: 100.

default-worker-threads *default_number_worker_threads*

Specify the default number of worker threads.

Must be an integer.

Default Value: 20.

http2-connect-timeout-ms *http2_connect_timeout*

Specify the request timeout period in milliseconds.

Must be an integer.

Default Value: 100.

http2-idle-connection-timeout-sec *http2_client_idle_connect_timeout*

Specify the idle connection timeout for HTTP2 client.

Must be an integer.

Default Value: 60.

max-timeouts-to-reconnect *max_requests_timeouts*

Specify the maximum request timeouts to reconnect HTTP2 connection.

Must be an integer.

Default Value: 0.

Usage Guidelines

Use this command to configure threading configuration for HTTP outgoing request from PCF.

Example

The following command configures the threading configuration for HTTP outgoing request from PCF with default priority of 5:

```
advance-tuning async-threading default-priority 5
```

advance-tuning async-threading threading-config

Configures threading configuration of servicethreading.

Command Modes

Exec > Global Configuration

Syntax Description

`threading-config` *`service_name`*

drop-oldest-when-full { false | true}

Specify to drop the oldest packet when the queue is full.

Must be one of the following:

- **false**
- **true**

priority *thread_priority*

Specify the threading priority.

Must be an integer.

queue-size *queue_size*

Specify the size of the queue.

Must be an integer.

service-name *service_name*

Specify the service name.

Must be a string.

threads *thread_number*

Specify the number of threads.

Must be an integer.

Usage Guidelines Use this command to configure threading configuration of service.

advance-tuning brute-force-recovery

Enables HTTP2 connection recovery parameters via closing connection.

Command Modes Exec > Global Configuration

Syntax Description **brute-force-recovery { max-reconnects** *max_http2_reconnects* **| time-interval-mins** *time_interval*}

max-reconnects *max_http2_reconnects*

Specify the maximum number of HTTP2 reconnect attempts to be allowed before restarting REST endpoint for recovery. Counter for previous reconnect attempts gets reset as per time-interval-mins. When set to 0, restart of rest endpoint is not performed even on reaching configured count and system continues attempting reconnect for recovery.

Must be an integer.

Default Value: 0.

time-interval-mins *time_interval*

Specify the time interval in minutes. If there is no HTTP2 reconnect triggered due to timeout for specified duration plus 1 minute then counter for previous reconnect attempts is reset to 0.

Must be an integer.

Default Value: 0.

Usage Guidelines Use this command to enable HTTP2 connection recovery parameters via closing connection.

advance-tuning http2-threading

Configures threading configuration for HTTP incoming request to PCF.

Command Modes Exec > Global Configuration

Syntax Description **advance-tuning http2-threading { disable-validation { false | true } | idle-thread-timeout-ms** *idle_thread_timeout* **| max-queue-capacity** *max_packet_capacity* **| max-thread-pool-size** *max_thread_pool_size* **| min-thread-pool-size** *min_thread_pool_size* **| request-timeout-ms** *request_timeout*}

disable-validation { false | true}

Specify to enable or disable validation.

Must be one of the following:

- **false**
- **true**

Default Value: false.

idle-thread-timeout-ms *idle_thread_timeout*

Specify the thread idle timeout in milliseconds.

Must be an integer.

Default Value: 60000.

max-queue-capacity *max_packet_capacity*

Specify the maximum packet capacity of the queue.

Must be an integer.

Default Value: 5000.

max-thread-pool-size *max_thread_pool_size*

Specify the maximum size of pool of threads.

Must be an integer.

Default Value: 20.

min-thread-pool-size *min_thread_pool_size*

Specify the minimum size of pool of threads.

Must be an integer.

Default Value: 5.

Usage Guidelines Use this command to configure threading configuration for HTTP incoming request to PCF.

Example

The following command configures the threading configuration for HTTP incoming request to PCF with maximum queue capacity of 500:

```
advance-tuning http2-threading max-queue-capacity 500
```

advance-tuning overload-control

Configures threading configuration for HTTP incoming request to PCF.

Command Modes Exec > Global Configuration

Syntax Description **`advance-tuning overload-control`**

Usage Guidelines Use this command to configure threading configuration for HTTP incoming request to PCF.

advance-tuning overload-control diameter global

Configures Overload Control configuration for all Diameter interfaces.

Command Modes Exec > Global Configuration

Syntax Description **`advance-tuning overload-control diameter global`**

Usage Guidelines Use this command to configure Overload Control configuration for all Diameter traffic.

advance-tuning overload-control diameter global action

Configures the action to take on overload detection.

Command Modes Exec > Global Configuration

Syntax Description **`action throttle-action`** *`throttle_action`*

action throttle-action *throttle_action*

Specify the action to take when overload traffic is detected.

Must be one of the following:

- **DROP**
- **REJECT**

Usage Guidelines Use this command to configure the action that must be taken on overload detection.

advance-tuning overload-control diameter global limits

Configures the limits for the overload handling parameters for the REST or Diameter interface.

Command Modes Exec > Global Configuration

Syntax Description **`limits max-requests-per-sec`** *`maximum_requests`*

max-requests-per-sec *maximum_requests*

Specify the maximum number of requests that are allowed per second before throttling is applied.

Must be an integer.

Usage Guidelines Use this command to configure the limits for overload handling parameters for the REST or Diameter interface.

advance-tuning overload-control rest global

Configures Overload Control configuration for all REST traffic.

Command Modes Exec > Global Configuration

Syntax Description **`advance-tuning overload-control rest global`**

Usage Guidelines Use this command to configure threading configuration for HTTP incoming request to PCF.

advance-tuning overload-control rest global action

Configures the action to take on overload detection.

Command Modes Exec > Global Configuration

Syntax Description **`action throttle-action`** *`throttle_action`*

action throttle-action *throttle_action*

Specify the action to take when overload traffic is detected.

Must be one of the following:

- **DROP**

- **REJECT**

Usage Guidelines Use this command to configure the action that must be taken on overload detection.

advance-tuning overload-control rest global limits

Configures the limits for the overload handling parameters for the REST or Diameter interface.

Command Modes Exec > Global Configuration

Syntax Description **limits max-requests-per-sec** *maximum_requests*

max-requests-per-sec *maximum_requests*

Specify the maximum number of requests that are allowed per second before throttling is applied.

Must be an integer.

Usage Guidelines Use this command to configure the limits for overload handling parameters for the REST or Diameter interface.

rest-endpoint

Configures the REST endpoint.

Command Modes Exec > Global Configuration

Syntax Description **rest-endpoint { ips** *ip_address* **| port** *port_number* **| replicas** *replica_count* **| tracing-service-name** *service_name*}

certificate-name *certificate_name*

Specify the alias name for the certificate.

http-connection-limit *max_inbound_https_connections*

Specify the maximum number of allowed inbound HTTPS connections.

Must be an integer.

Default Value: 200.

http-idle-connection-timeout-on-server-seconds *connection_timeout*

Specify the server side idle connection timeout period in seconds.

Must be an integer.

Default Value: 60.

inbound-request-timeout-ms *inbound_requests_timeout*

Specify the timeout period for inbound requests in milliseconds.

Must be an integer.

Default Value: 2000.

ips *ip_address*

Specify the IP addresses for the REST service.

outbound-request-timeout-ms *outbound_requests_timeout*

Specify the timeout period for outbound requests in milliseconds.

Must be an integer.

Default Value: 200.

port *port_number*

Specify port number of the REST service.

Must be an integer.

replicas *replica_count*

Specify the replica count.

Must be an integer.

Default Value: 1.

repository *repository_name*

Specify to override the Helm repository.

tracing-service-name *tracing_service_name*

Specify the tracing service name for REST endpoint.

Must be a string.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**
- **https**

Default Value: http.

Usage Guidelines

Use this command to configure the REST endpoint.

Example

The following command configures the REST endpoint tracing service name as nPcf-pcf-rest-ep:

```
rest-endpoint tracing-service-name nPcf-pcf-rest-ep
```

rest-endpoint certificate-status

Displays certificate status.

Command Modes Exec > Global Configuration

Syntax Description **`show certificate-status`**

certificateName

Displays the certificate name.

Must be a string.

timeToExpire

Displays the time to expire.

Must be a string.

Usage Guidelines Use this command to view certificate status.

rest-endpoint discovered-profiles

Displays the PCF discovered and cached NFs.

Command Modes Exec > Global Configuration

Syntax Description **`show discovered-profiles`**

Usage Guidelines Use this command to view the PCF discovered and cached NFs.

rest-endpoint discovered-profiles chf

Displays PCF Discover cache for CHF.

Command Modes Exec > Global Configuration

Syntax Description **`show discovered-profiles chf`**

expiry

The expiration time in seconds.

Must be a string.

ipv4Address

The NF IPv4 address.

Must be a string.

nfInstanceId

The NF Instance ID.

Must be a string.

nfStatus

Is the PCF instance registered to NRF.

Must be a string.

nfType

The NF type.

Must be a string.

port

The NF port number.

Usage Guidelines Use this command to view PCF Discover cache for CHF.

rest-endpoint discovered-profiles udr

Displays PCF Discover cache for UDR.

Command Modes Exec > Global Configuration

Syntax Description `show discovered-profiles udr`

expiry

The expiration time in seconds.

Must be a string.

ipv4Address

The NF IPv4 address.

Must be a string.

nfInstanceId

The NF Instance ID.

Must be a string.

nfStatus

Is the PCF instance registered to NRF.

Must be a string.

nfType

The NF type.

Must be a string.

port

The NF port number.

Usage Guidelines Use this command to view PCF Discover cache for UDR.

rest-endpoint interface

Configures the NF interfaces.

Command Modes Exec > Global Configuration

Syntax Description

```
rest-endpoint interface interface_type { ip ip_address |
notify-update-retry-count notify_update_retry_count |
outbound-request-timeout-ms outbound_request_timeout | port port_number}
```

interface *interface_type*

Specify the NF interface type.

ip *ip_address*

Specify the NF interface IP address.

notify-update-retry-count *notify_update_retry_count*

Specify the retry count for N7 NotifyUpdate outbound requests in case of timeout.

Must be an integer.

Default Value: 0.

outbound-request-timeout-ms *outbound_request_timeout*

Specify the timeout period for outbound requests in milliseconds.

Must be an integer.

port *port_number*

Specify the port number for NF interface.

Must be an integer.

Usage Guidelines Use this command to configure NF interfaces.

Example

The following command configures the NF interface to restEndpoint with the IP address 11.11.11.11:

```
rest-endpoint interface restEndpoint ip 11.11.11.11
```

rest-endpoint peer-status

Displays the NF's peer status.

Command Modes Exec > Global Configuration

Syntax Description `show peer-status`

connectionDuration

Displays the NF connection uptime duration.

Must be a string.

nfName

Displays the PCF Discover cache for UDR.

Must be a string.

peerIp

Displays the NF peer IP address.

Must be a string.

peerPort

Displays the NF peer port number.

Must be a string.

podIp

Displays the PCF pod IP address.

Must be a string.

Usage Guidelines Use this command to view the NF's peer status.

rest-endpoint registration-status

Displays NRF registration details.

Command Modes Exec > Global Configuration

Syntax Description **`show registration-status`**

nrfUri

Displays the registered NRF URI.

Must be a string.

podIp

Displays the PCF pod ID.

Must be a string.

registered

Displays whether Is PCF instance is registered to NRF.

Must be a string.

Usage Guidelines Use this command to view NRF registration details.

traffic engine

Configures the default engine group to receive traffic.

Command Modes Exec > Global Configuration

Syntax Description **`traffic engine default-destination`** *`default_destination`*

default-destination *default_destination*

Specify the default engine group to receive the traffic.

Usage Guidelines Use this command to configure the default engine group to receive traffic. Note that a similar command is available for PCRF.

Example

The following command configures the default engine group as /policy-test:engine/test-test1:group:

```
traffic engine default-destination /policy-test:engine/test-test1:group
```

traffic engine rule

Configures traffic routing rule paramaeters.

Command Modes Exec > Global Configuration

Syntax Description

traffic engine rule *rule_name* **{ dnn** *dnn_route* **| supi** *supi_route* **| gpsi** *gpsi_route* **| hash-prefix** *hash_prefix_route* **| intf** *interface_route* **| destination** *engine_group*}

destination *engine_group*

Specify the engine group to receive traffic.

dnn *dnn_route*

Specify the route on DNN - regex.

Must be a string.

gpsi *gpsi_route*

Specify the route on GPSI - regex.

Must be a string.

hash-prefix *hash_prefix_route*

Specify the route on 2-digit hash - prefix.

Must be a string.

intf *interface_route*

Specify the route on interface type - exact.

Must be a string.

supi *supi_route*

Specify the route on SUPI - regex.

Must be a string.

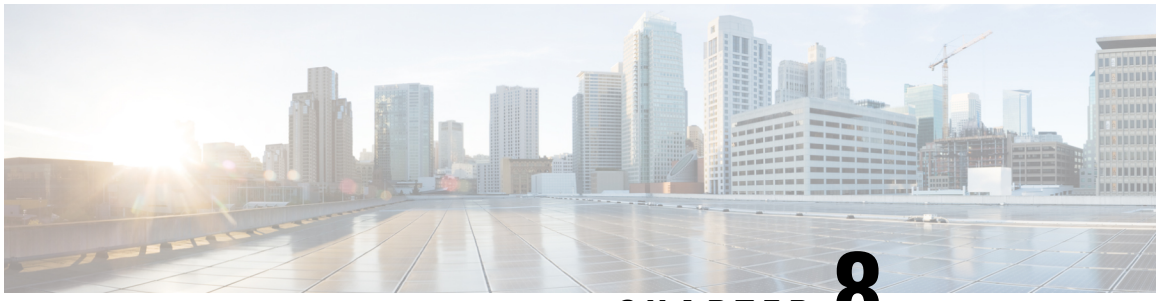
rule_name

Specify the rule name.

Must be a string.

Usage Guidelines

Use this command to configure the traffic routing rule parameters.



CHAPTER 8

Mobile Policy Services Repository Commands

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clear subscriber

Clears subscriber session information.

Command Modes

Exec

Syntax Description

`clear subscriber [ imsi` *`imsi`* **`| msisdn`** *`msisdn`* **`]`**

imsi *imsi*

Specify the IMSI.

Must be a string.

msisdn *msisdn*

Specify the MSISDN.

Must be a string.

Usage Guidelines

Use this command to clear subscriber session information.

deployment add config

Configures the cluster name and unified API external IP parameters.

Command Modes

Exec > Global Configuration

Syntax Description **deployment add config { cluster-name** *cluster_name* **| port** *port_number* **| unified-api-external-ip** *ip_address*}

cluster-name *cluster_name*

Specify the cluster name.

Must be a string.

port *port_number*

Specify the port number of the unified API service.

unified-api-external-ip *ip_address*

Specify the external IP address of the unified API service.

Usage Guidelines Use this command to configure the cluster name and unified API external IP parameters.

deployment remove-config

Removes the deployment configuration file.

Command Modes Exec

Syntax Description **deployment remove-config**

Usage Guidelines Use this command to remove the deployment configuration file.

deployment show-config

Displays configuration information.

Command Modes Exec

Syntax Description **deployment show-config**

Usage Guidelines Use this command to view the configuration information.

group nf-mgmt

Configures the NF management group parameters.

Command Modes Exec > Global Configuration

Syntax Description **group nf-mgmt** *group_name* **nrf-mgmt-group registerGroup { nrf-mgmt-group** *mgmt_group_name* **| api-version** *api_version* **| locality** *group_locality*}

api-version *api_version*

Specify the NF Management Service API version supported by the NRF.

Must be one of the following:

- **1.0.0**
- **1.0.2**

Default Value: 1.0.0.

load-report-enabled { false | true}

Specify to enable or disable sending cluster load in NRF heartbeat requests.

Must be one of the following:

- **false**
- **true**

Default Value: true.

locality *group_locality*

Specify the NRF group locality.

Must be a string.

nrf-mgmt-group *mgmt_group_name*

Specify the NRF management group name.

group_name

Specify the group name.

Must be a string.

Usage Guidelines Use this command to enter the NRF management group configuration.

group nf-mgmt failover

Configures the failover SLA parameters.

Command Modes Exec > Global Configuration

Syntax Description **failover group nf-mgmt** *group_name* **failover sla** *failover_sla*

failover_sla

Specify the failover SLA value in milliseconds.

Must be an integer.

Usage Guidelines Use this command to configure the failover SLA parameters.

group nf-mgmt reconnect

Configures the reconnect interval.

Command Modes Exec > Global Configuration

Syntax Description **reconnect interval** *reconnect_interval*

reconnect_interval

Specify the reconnect interval in milliseconds.

Must be an integer.

Usage Guidelines Use this command to configure the reconnect interval.

group nrf discovery

Configures NRF discovery group parameters.

Syntax Description **group nrf discovery** *group_name*

group_name

Specify the discovery group name.

Must be a string.

Usage Guidelines Use this command to configure NRF discovery group parameters. Enters the NRF Discovery Configuration mode.

group nrf discovery service type nrf

Configures the NRF discovery service type.

Syntax Description **group nrf discovery** *group_name* **service type nrf nnrf-disc** *service_type*

service_type

Specify the NRF discovery service type.

Must be one of the following:

- **nnrf-disc**

Usage Guidelines Use this command to configure the NRF discovery service type.

group nrf discovery service type nrf endpoint-profile

Configures the endpoint profile parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ capacity** *endpoint_capacity* **| priority** *endpoint_priority* **| api-uri-prefix** *api_uri_prefix* **| api-root** *api_string* **| api-root** *api_string* **| uri-scheme** *uri_scheme*}

api-root *api_string*

Specify the deployment-specific service API prefix that is used within the { apiRoot }.

Must be a string.

api-uri-prefix *api_uri_prefix*

Specify the API URI prefix. If not configured, it takes the standard API name for the service as per the specification.

Must be a string.

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

Default Value: 10.

certficate-name *certficate_name*

Specify the alias name for client certificate.

Must be a string.

client-certificate *client_certificate*

Specify the client certificate in PEM format.

client-key *client_key*

Specify the client private key in PEM format.

name *endpoint_profile_name*

Specify the endpoint profile name.

Must be a string.

priority *endpoint_priority*

Specify the endpoint's priority.

Must be an integer.

Default Value: 1.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**
- **https**

Default Value: http.

Usage Guidelines Use this command to configure the endpoint profile parameters.

group nrf discovery service type nrf endpoint-profile endpoint-name

Configures endpoint name.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ priority** *endpoint_priority* **| capacity** *endpoint_capacity*}

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

name *endpoint_name*

Specify the endpoint name.

Must be a string.

priority *endpoint_priority*

Specify the priority for the service to select the appropriate profile using the load-balancing logic.

Must be an integer.

Usage Guidelines Use this command to configure the endpoint name.

group nrf discovery service type nrf endpoint-profile endpoint-name primary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf discovery service type nrf endpoint-profile endpoint-name secondary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf discovery service type nrf endpoint-profile endpoint-name tertiary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf discovery service type nrf endpoint-profile version uri-version

Configures the URI version.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **version** *uri_version* **full-version** *full_version*

full-version *full_version*

Specify the full URI version in the format *major-version*.*minor-version*.*patch-version*.[alpha-*draft-number*].

Must be a string.

uri_version

Specify the URI version.

Must be a string in the pattern v\d.

Usage Guidelines Use this command to configure the URI version.

group nrf mgmt

Configures the NRF management group parameters.

Syntax Description **group nrf mgmt** *mgmt_group_name*

mgmt_group_name

Specify the management group name.

Must be a string.

Usage Guidelines Use this command to configure the NRF management group parameters.

group nrf mgmt service type nrf

Configures the NRF management service type.

Syntax Description **group nrf mgmt** *group_name* **service type nrf** *service_name*

service_name

Specify the service name.

Must be one of the following:

- **nnrf-nfm**

Usage Guidelines Use this command to configure the NRF management service type.

group nrf mgmt service type nrf endpoint-profile

Configures the endpoint profile parameters.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ capacity** *endpoint_capacity* **| priority** *endpoint_priority* **| api-uri-prefix** *api_uri_prefix* **| api-root** *api_string* **| api-root** *api_string* **| uri-scheme** *uri_scheme*}

api-root *api_string*

Specify the deployment-specific service API prefix that is used within the { apiRoot }.

Must be a string.

api-uri-prefix *api_uri_prefix*

Specify the API URI prefix. If not configured, it takes the standard API name for the service as per the specification.

Must be a string.

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

Default Value: 10.

certficate-name *certficate_name*

Specify the alias name for client certificate.

Must be a string.

client-certificate *client_certificate*

Specify the client certificate in PEM format.

client-key *client_key*

Specify the client private key in PEM format.

name *endpoint_profile_name*

Specify the endpoint profile name.

Must be a string.

priority *endpoint_priority*

Specify the endpoint's priority.

Must be an integer.

Default Value: 1.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**
- **https**

Default Value: http.

Usage Guidelines Use this command to configure the endpoint profile parameters.

group nrf mgmt service type nrf endpoint-profile endpoint-name

Configures endpoint name.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ priority** *endpoint_priority* **| capacity** *endpoint_capacity*}

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

name *endpoint_name*

Specify the endpoint name.

Must be a string.

priority *endpoint_priority*

Specify the priority for the service to select the appropriate profile using the load-balancing logic.

Must be an integer.

Usage Guidelines Use this command to configure the endpoint name.

group nrf mgmt service type nrf endpoint-profile endpoint-name primary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf mgmt service type nrf endpoint-profile endpoint-name secondary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf mgmt service type nrf endpoint-profile endpoint-name tertiary ip-address

Configures the IP address and port parameters.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile* **endpoint-name** *endpoint_name* **{ primary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | secondary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **] | tertiary ip-address [ipv4** *ipv4_address* **| ipv6** *ipv6_address* **| port** *port_number* **]}**

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

fqdn *fqdn*

Specify the fully qualified domain name.

Must be a string.

ipv4 *ipv4_address*

Specify the IPv4 address.

ipv6 *ipv6_address*

Specify the IPv6 address.

port *port_number*

Specify the port number.

Usage Guidelines

Use this command to configure the IP address and port parameters.

group nrf mgmt service type nrf endpoint-profile version uri-version

Configures the URI version.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **version** *uri_version* **full-version** *full_version*

full-version *full_version*

Specify the full URI version in the format *major-version*.*minor-version*.*patch-version*.[alpha-*draft-number*].

Must be a string.

uri_version

Specify the URI version.

Must be a string in the pattern v\d.

Usage Guidelines Use this command to configure the URI version.

profile nf-client nf-type bsf bsf-profile

Configures the BSF profile parameters.

Command Modes Exec > Global Configuration

Syntax Description **profile nf-client nf-type bsf bsf-profile** *bsf_profile*

bsf_profile_name

Specify the BSF profile name.

Must be a string.

Usage Guidelines Use this command to configure the BSF profile parameters.

profile nf-client nf-type bsf bsf-profile locality

Configures the locality parameters.

Command Modes Exec > Global Configuration

Syntax Description **nf-client nf-type bsf profile nf-client nf-type bsf bsh-profile** *bsf_profile* **locality** *locality*

priority *locality_priority*

Specify the locality priority.

Must be an integer.

Default Value: 65535.

locality_name

Specify the locality name.

Must be a string.

Usage Guidelines Use this command to configure the locality parameters.

profile nf-client nf-type bsf bsf-profile locality service name type

Configures the BSF service type.

Command Modes Exec > Global Configuration

Syntax Description **profile nf-client nf-type** *bsf* **chf-profile** *profile_name* **locality** *locality* **{ priority** *priority* **| service** *service_name* **type** *service_type*}

type *service_type*

Specify the service type.

Must be one of the following:

- **nbsf-management**

Usage Guidelines Use this command to configure the BSF service type.

profile nf-client nf-type bsf bsf-profile locality service name type endpoint-profile

Configures the endpoint profile parameters.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ capacity** *endpoint_capacity* **| priority** *endpoint_priority* **| api-uri-prefix** *api_uri_prefix* **| api-root** *api_string* **| api-root** *api_string* **| uri-scheme** *uri_scheme*}

api-root *api_string*

Specify the deployment-specific service API prefix that is used within the { apiRoot }.

Must be a string.

api-uri-prefix *api_uri_prefix*

Specify the API URI prefix. If not configured, it takes the standard API name for the service as per the specification.

Must be a string.

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

Default Value: 10.

certficate-name *certficate_name*

Specify the alias name for client certificate.

Must be a string.

client-certificate *client_certificate*

Specify the client certificate in PEM format.

client-key *client_key*

Specify the client private key in PEM format.

name *endpoint_profile_name*

Specify the endpoint profile name.

Must be a string.

priority *endpoint_priority*

Specify the endpoint's priority.

Must be an integer.

Default Value: 1.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**
- **https**

Default Value: http.

Usage Guidelines Use this command to configure the endpoint profile parameters.

profile nf-client nf-type bsf bsf-profile locality service name type endpoint-profile endpoint-name

Configures endpoint name.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ priority** *endpoint_priority* **| capacity** *endpoint_capacity*}

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

name *endpoint_name*

Specify the endpoint name.

Must be a string.

priority *endpoint_priority*

Specify the priority for the service to select the appropriate profile using the load-balancing logic.

Must be an integer.

Usage Guidelines Use this command to configure the endpoint name.

profile nf-client nf-type bsf bsf-profile locality service name type endpoint-profile version uri-version

Configures the URI version.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **version** *uri_version* **full-version** *full_version*

full-version *full_version*

Specify the full URI version in the format *major-version*.*minor-version*.*patch-version*.[alpha-*draft-number*].

Must be a string.

uri_version

Specify the URI version.

Must be a string in the pattern v\d.

Usage Guidelines Use this command to configure the URI version.

profile nf-client nf-type chf chf-profile

Configures the locality for the UDR profile.

Syntax Description **`profile nf-client nf-type chf chf-profile`** *`chf_profile`*

chf_profile_name

Specify the CHF profile name.

Must be a string.

Usage Guidelines Use this command to configure the locality for the CHF profile.

profile nf-client nf-type chf chf-profile locality

Configures the locality for the CHF profile.

Syntax Description **`nf-client nf-type chf profile nf-client nf-type chf chf-profile`** *`chf_profile`* **`locality`** *`locality`*

priority *priority*

Specify the priority for the CHF local configuration."

Must be an integer.

Default Value: 65535.

locality_name

Specify the locality name.

Must be a string.

Usage Guidelines Use this command to configure the locality for the CHF profile.

profile nf-client nf-type chf chf-profile locality service name type

Configures the CHF service type.

Command Modes Exec > Global Configuration

Syntax Description **profile nf-client nf-type** *chf* **chf-profile** *profile_name* **locality** *locality* **{ priority** *priority* **| service** *service_name* **type** *service_type*}

type *service_type*

Specify the CHF service type.

Must be one of the following:

- **nchf-spendinglimitcontrol**

Usage Guidelines Use this command to configure the CHF service type.

profile nf-client nf-type chf chf-profile locality service name type endpoint-profile

Configures the endpoint profile parameters.

Command Modes Exec > Global Configuration

Syntax Description **group nrf discovery** *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ capacity** *endpoint_capacity* **| priority** *endpoint_priority* **| api-uri-prefix** *api_uri_prefix* **| api-root** *api_string* **| api-root** *api_string* **| uri-scheme** *uri_scheme*}

api-root *api_string*

Specify the deployment-specific service API prefix that is used within the { apiRoot }.

Must be a string.

api-uri-prefix *api_uri_prefix*

Specify the API URI prefix. If not configured, it takes the standard API name for the service as per the specification.

Must be a string.

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

Default Value: 10.

certficate-name *certficate_name*

Specify the alias name for client certificate.

Must be a string.

client-certificate *client_certificate*

Specify the client certificate in PEM format.

client-key *client_key*

Specify the client private key in PEM format.

name *endpoint_profile_name*

Specify the endpoint profile name.

Must be a string.

priority *endpoint_priority*

Specify the endpoint's priority.

Must be an integer.

Default Value: 1.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**
- **https**

Default Value: http.

Usage Guidelines Use this command to configure the endpoint profile parameters.

profile nf-client nf-type chf chf-profile locality service name type endpoint-profile endpoint-name

Configures endpoint name.

Command Modes Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **{ priority** *endpoint_priority* **| capacity** *endpoint_capacity*}

capacity *endpoint_capacity*

Specify the node capacity for the endpoint.

Must be an integer.

name *endpoint_name*

Specify the endpoint name.

Must be a string.

priority *endpoint_priority*

Specify the priority for the service to select the appropriate profile using the load-balancing logic.

Must be an integer.

Usage Guidelines

Use this command to configure the endpoint name.

profile nf-client nf-type chf chf-profile locality service name type endpoint-profile version uri-version

Configures the URI version.

Command Modes

Exec > Global Configuration

Syntax Description

group nrf discovery *discovery_group* **service type nrf nnrf-disc endpoint-profile** *endpoint_profile_name* **version** *uri_version* **full-version** *full_version*

full-version *full_version*

Specify the full URI version in the format *major-version*.*minor-version*.*patch-version*.[alpha-*draft-number*].

Must be a string.

uri_version

Specify the URI version.

Must be a string in the pattern v\d.

Usage Guidelines

Use this command to configure the URI version.

profile nf-client nf-type udr udr-profile locality

Configures the locality for the UDR profile.

Syntax Description **profile nf-client nf-type udr udr-profile** *udr_profile* **locality** *locality* **[priority** *priority* **| service** *udr_service* **]**

priority *priority*

Specify the priority for the UDR local configuration."

Must be an integer.

udr-profile *udr_profile_name*

Specify the UDR profile name."

Must be a string.

Usage Guidelines Use this command to configure the locality for the UDR profile.

profile nf-client nf-type udr udr-profile locality service name type

Configures UDR service type.

Command Modes Exec > Global Configuration

Syntax Description **profile nf-client nf-type** *udr* **udr-profile** *profile_name* **locality** *locality* **{ priority** *priority* **| service** *service_name* **type** *service_type*}

type *service_type*

Specify the service type.

Must be one of the following:

- **nudr-dr**

Usage Guidelines Use this command to configure the UDR service type.

profile nf-pair nf-type

Configures the NF type for the NF client pair configuration.

Syntax Description **profile nf-pair nf-type** *nf_type* **nrf-discovery-group** *group_name* **{ subscription-enabled { false | true } | subscription-enabled { false | true } | subscription-extension** *extension_duration*}

nrf-discovery-group *group_name*

Specifiy the NRF discovery group name.

subscription-enabled { false | true}

Specifiy to enable or disable the subscription to NRF for NF change.

Must be one of the following:

- **false**
- **true**

Default Value: false.

subscription-extension *extension_duration*

Specify the duration for which the subscription must be extended in minutes.

Must be an integer.

Default Value: 60.

nf_type

Specifiy the NF type.

Must be one of the following:

- **BSF**
- **CHF**
- **UDR**

Usage Guidelines Use this command to configure the NF type for the NF client pair configuration.

profile nf-pair nf-type locality

Configures the locality parameters.

Command Modes Exec > Global Configuration

Syntax Description **`profile nf-pair nf-type`** *`nf_type`* **`nrf-discovery-group`** *`group_name`* **`locality [ client`** *`client_locality`* **`| preferred-server`** *`preferred_server`* **`| geo-server`** *`geo_server`* **`]`**

client *client_locality*

Specify the locality of the client.

geo-server *geo_service_locality*

Specify the geo-server locality information.

Must be a string.

preferred-server *preferred_server_locality*

Specify the preferred server locality information.

Must be a string.

Usage Guidelines Use this command to configure the locality parameters.

service-registration profile

Configures the network function profile parameters to enable discovery of the registered NFs, and when the discovery fails, the discovery is attempted on the local configuration.

Command Modes Exec > Global Configuration

Syntax Description **service-registration profile { allowed-plmns {** *mobile_country_code* **|** *mobile_network_code* **} | capacity** *profile_capacity* **| instance-id** *instance_id_pcf* **| locality** *pcf_location* **| nf-status** *nf_service_status* **| pcf-info { dnn-list | supi-ranges } | plmn-list {** *mobile_country_code* **|** *mobile_network_code* **} | priority** *profile_priority* **| snssais {** *slice_service_type* **| sd** *service_differentiator* **}}**

capacity *profile_capacity*

Specify the PCFs profile's capacity.

Must be an integer.

fqdn *fqdn*

Specify the fully qualified domain name of the PCF. For example, pcf.5gc.mnc123.mcc089.pub.3gppnetwork.org.

Must be a string.

instance-id *pcf_instance_id*

Specify the PCF instance ID.

Must be a string.

locality *pcf_location*

Specify the location of the PCF.

Must be a string.

capacity *profile_capacity*

Specify the PCFs profile's capacity.

Must be an integer.

fqdn *fqdn*

Specify the fully qualified domain name of the PCF. For example, pcf.5gc.mnc123.mcc089.pub.3gppnetwork.org.

Must be a string.

instance-id *pcf_instance_id*

Specify the PCF instance ID.

Must be a string.

locality *pcf_location*

Specify the location of the PCF.

Must be a string.

priority *profile_priority*

Specify the PCF profile's priority.

Must be an integer.

nf_service_status

Specify the PCF service status.

Must be one of the following:

- **REGISTERED**
- **UNDISCOVERABLE**

Default Value: REGISTERED.

Usage Guidelines Use this command to configure the network function profile.

service-registration profile allowed-plmns

Configures PLMNs allowed to access the network function.

Command Modes Exec > Global Configuration

Syntax Description **`service-registration profile allowed-plmns {`** *`mobile_country_code`* **`|`** *`mobile_network_code`*`}`

mobile_country_code

Specify the Mobile Country Code.

Must be a string in the pattern \d{3}.

mobile_network_code

Specify the Mobile Network Code.

Must be a string in the pattern \d{2,3}.

Usage Guidelines Use this command to configure PLMNs allowed to access the network function.

service-registration profile pcf-info

Configures the PCF parameters.

Command Modes Exec > Global Configuration

Syntax Description **service-registration profile pcf-info { dnn-list** *dnn_list_name* **| supi-ranges** *supi_range_id* **[start** *start_value* **| pattern** *range_pattern* **| end** *end_value* **]}**

dnn_list

Specify the DNNs supported by the PCF.

Must be a string.

Usage Guidelines Use this command to configure PCF parameters.

service-registration profile pcf-info supi-ranges

Configures the list of SUPI ranges, which the PCF instance serves.

Command Modes Exec > Global Configuration

Syntax Description **service-registration profile pcf-info supi-ranges** *supi_range_id* **[start** *start_value* **| pattern** *range_pattern* **| end** *end_value* **]**

end *end_value*

Specify the last value of the SUPI range.

Must be a string in the pattern [0-9]+.

pattern *range_pattern*

Specify the regular expression according to the ECMA-262 dialect that represents the set of SUPIs belonging to the specified range.

Must be a string.

start *start_value*

Specify the first value of the SUPI range.

Must be a string in the pattern [0-9]+.

supi_range_id

Specify the SUPI range identifier.

Must be a string.

Usage Guidelines Use this command to configure the list of SUPI ranges, which the PCF instance serves.

service-registration profile plmn-list

Configures the PLMNs of the network function.

Command Modes Exec > Global Configuration

Syntax Description **service-registration profile plmn-list {** *mobile_country_code* **|** *mobile_network_code*}

mobile_country_code

Specify the Mobile Country Code.

Must be a string in the pattern \d{3}.

mobile_network_code

Specify the Mobile Network Code.

Must be a string in the pattern \d{2,3}.

Usage Guidelines Use this command to configure the PLMNs of the network function.

service-registration profile snssais

Configures the S-NSSAIs of the network function.

Command Modes Exec > Global Configuration

Syntax Description **service-registration profile snssais {** *slice_service_type* **| sd** *service_differentiator*}

sd *slice_differentiator*

Specify the Slice Differentiator value.

Must be a string.

slice_service_type

Specify the Slice or Service Types value.

Must be an integer in the range of 0-255.

Usage Guidelines Use this command to configure the S-NSSAIs of the network function.

service-registration services

Configures the service parameters.

Command Modes Exec > Global Configuration

Syntax Description **service-registration services** *services_name*

api-version *api_version*

Specify the API version.

Must be one of the following:

- **1.0.0**
- **1.0.2**

Default Value: 1.0.0.

service_name

Specify the service name.

Must be one of the following:

- **amfService**
- **smfService**

Usage Guidelines Use this command to configure the service parameters.

service-registration services allowed-nssais

Command Modes Exec > Global Configuration

Syntax Description **service-registration services** *service_name* **allowed-nssais {** *slice_service_type* **| sd** *service_differentiator*}

sd *slice_differentiator*

Specify the Slice Differentiator value.

Must be a string.

slice_service_type

Specify the Slice or Service Types value.

Must be an integer in the range of 0-255.

Usage Guidelines Use this command to configure the S-NSSAIs allowed of the NF service instance.

service-registration services allowed-plmns

Configures the PLMNs allowed to access the NF service instance.

Command Modes Exec > Global Configuration

Syntax Description **service-registration services** *service_name* **allowed-plmns {** *mobile_country_code* **|** *mobile_network_code*}

mobile_country_code

Specify the Mobile Country Code.

Must be a string in the pattern \d{3}.

mobile_network_code

Specify the Mobile Network Code.

Must be a string in the pattern \d{2,3}.

Usage Guidelines Use this command to configure the PLMNs allowed to access the NF service instance.

show subscriber

Displays subscriber session information.

Command Modes Exec

Syntax Description **show subscriber [imsi** *imsi* **| msisdn** *msisdn* **]**

imsi *imsi*

Specify the IMSI.

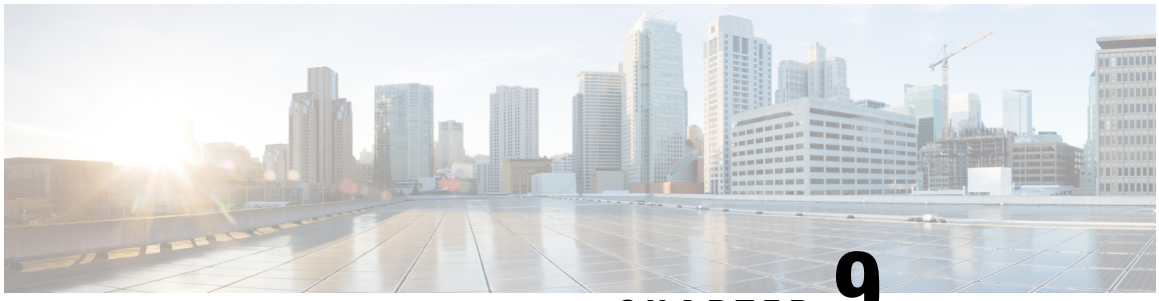
Must be a string.

msisdn *msisdn*

Specify the MSISDN.

Must be a string.

Usage Guidelines Use this command to view subscriber session information.



CHAPTER 9

Mobile Policy TLS Commands

- pcf-tls ca-certificates, on page 109
- pcf-tls certificates, on page 109

pcf-tls ca-certificates

Configures the certificate name and data configuration.

Command Modes Exec > Global Configuration

Syntax Description **`ca-certificates`** *`certificate_alias_name`* **`cert-data`** *`certificate_data`*

cert-data *certificate_data*

Specify the certificate data in PEM format.

Must be a string.

certificate_alias_name

Specify the alias name for the certificate.

Must be a string.

Usage Guidelines Use this command to configure the certificate name and data configuration.

pcf-tls certificates

Configures the certificate name, data, and key parameters.

Command Modes Exec > Global Configuration

Syntax Description **`certificates`** *`certificate_alias_name`* **`cert-data`** *`certificate_data`* **`private-key`** *`certificate_private_key`*

cert-data *certificate_data*

Specify the certificate data in PEM format.

Must be a string.

private-key *certificate_private_key*

Specify the certificate private key in PEM format.

Must be a string.

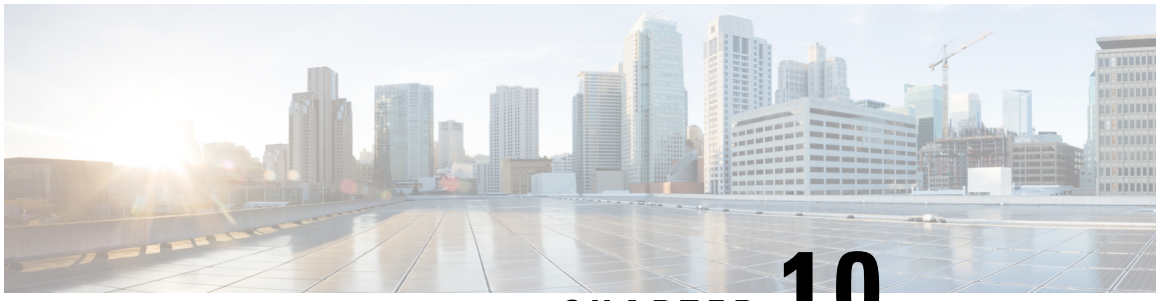
certificate_alias_name

Specify the alias name for the certificate.

Must be a string.

Usage Guidelines

Use this command to configure the certificate name, data, and key parameters.



CHAPTER 10

Mobile Policy Types Commands

- api unified, on page 111
- engine, on page 112
- engine environment, on page 113
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- label service-layer, on page 119

api unified

Configures Engine API parameters.

Command Modes

Exec > Global Configuration

Syntax Description

`api unified { [ engine-group` *`engine_group`* **`] [ externalIPs`** *`ip_address`* **`]}`**

engine-group *engine_group*

Specify the default engine group to receive API traffic.

external-port *port_number*

Specify the API service port number.

Must be an integer.

externalIPs *ip_address*

Specify external IP address for the API service.

Usage Guidelines Use this command to configure Engine API parameters.

engine

Configures the engine parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **[boot-config** *engine_name* **| config-lock { false | true } | environment** *environment_variables* **| grpc** *grpc_configuration_options* **| install-features** *application_features* **| patching** *patching_jars* **| properties** *system_properies* **| release-train** *release_train_image* **| replicas** *replica_count* **| repository** *helm_repository* **| subversion-config-url** *subversion_config_url* **| subversion-run-url** *subversion_run_url* **| tracing-service-name** *tracing_server* **| unified-api-replicas** *unified_api_count* **]**

boot-config *engine_name*

Specify the engine name to boot the initial engine group.

config-lock { false | true}

Specify to enable or disable the configuration lock.

Must be one of the following:

- **false**
- **true**

Default Value: false.

grouping *engine_group_name*

Specify the engine group's name.

Must be a string in the pattern [a-zA-Z][a-zA-Z0-9-]*.

release-train *release_train_image*

Specify the release train image.

Must be a string.

replicas *replica_count*

Specify the replica count.

Must be an integer.

Default Value: 1.

repository *helm_repository*

Specify the Helm repository.

subversion-config-url *subversion_config_url*

Specify the subversion configuration URL.

Must be a string.

subversion-run-url *subversion_run_url*

Specify the subversion run URL.

Must be a string.

tracing-service-name *tracing_server_name*

Specify the tracing server name used for Policy Engine.

Must be a string.

Usage Guidelines Use this command to configure the engine parameters.

engine environment

Configures the environment variables exposed to engine-app pods.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **environment** *name* **value** *value*

name

Specify the property/environment name.

Must be a string.

value *value*

Specify the value for the environment.

Must be a string.

Usage Guidelines Use this command to configure the environment variables exposed to engine-app pods.

engine grpc

Configures the gRPC parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **grpc [externalIPs** *external_ip_address* **| port** *grpc_port_number* **]**

externalIPs *external_ip_address*

Specify the external IP address.

port *grpc_port_number*

Specify the gRPC port number.

Must be an integer.

Usage Guidelines Use this command to configure the gRPC parameters.

engine install-features

Configures the installation feature parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **install-features { policy-builder** *policy_builder_name* **| policy-server** *policy_server_name*}

policy-builder *policy_builder_name*

Specify the policy builder feature to be installed.

Must be a string.

policy-server *policy_server_name*

Specify the policy server feature feature to be installed.

Must be a string.

Usage Guidelines Use this command to configure the feature parameters.

engine n7

Configures the n7 interface engine configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description **n7 defaultBearerUpliftAllowed** *defaultBearer_uplift_allowed* **disableCombinedN7Notify { false | true}**

defaultBearerUpliftAllowed *defaultBearer_uplift_allowed*

Specify the number of times defaultbearer uplift must be allowed during the course of Rx session.

Must be an integer.

Default Value: 1.

disableCombinedN7Notify { false | true}

Specify whether to send combined n7 notify request having default and dedicated bearer detail, or to send separate n7 notify requests for default and dedicated bearer.

Must be one of the following:

- **false**
- **true**

Default Value: false.

Usage Guidelines Use this command to configure the n7 interface engine configuration parameters.

engine patching patch

Configures the patching parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **patching patch** *patch_id* **[[jar** *jar_to_patch* **] [version** *jar_version_number* **]]**

jar *jar_to_patch*

Specify the jar to patch.

Must be a string.

version *jar_version_number*

Specify the version number of jar. Changes every time a new patch is uploaded.

Must be an integer.

Default Value: 1.

patch_id

Specify the ID of the patch to apply.

Must be a string.

Usage Guidelines Use this command to configure the patching parameters.

engine properties

Configures the system properties passed to the application.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **properties** *name* **value** *value*

name *name*

Specify the property/environment name.

Must be a string.

value *value*

Specify the value for the environment.

Must be a string.

Usage Guidelines Use this command to configure the system properties passed to the application.

engine resources limits

Configures the resource request parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **resources limits { [cpu** *cpu_limit* **] [memory** *memory_limit* **]}**

cpu *cpu_limit*

Specify the CPU limit. If not specified, the default value is set to 18.

Must be an integer in the range of 5-16.

Default Value: 14.

memory *memory_limit*

Specify the memory limit. If not specified, the default value is set to 20Gi.

Must be a string.

Default Value: 20Gi.

Usage Guidelines Use this command to configure the resource request parameters.

engine resources requests

Configures the resource request parameters.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* **resources requests { [cpu** *cpu_request* **] [memory** *memory_request* **]}**

cpu *cpu_request*

Specify the CPU request.

Must be an integer in the range of 1-5.

Default Value: 5.

memory *memory_request*

Specify the memory request.

Must be a string.

Default Value: 10Gi.

Usage Guidelines Use this command to configure the resource request parameters.

engine scheduling-affinity

Configures the scheduling affinity for Policy Engine pods.

Command Modes Exec > Global Configuration

Syntax Description **engine** *engine_name* scheduling-affinity { true | false }

engine *engine_name*

Specify the Policy Engine for which scheduling affinity must be configured.

Must be a string.

scheduling-affinity { true | false }

Configures pod anti-affinity behavior for Policy Engine pods.

- **true** - Enables strict pod anti-affinity and ensures that only one Policy Engine pod is scheduled per node.
- **false** - Relaxes pod anti-affinity and allows multiple Policy Engine pods to be scheduled on the same node, based on available resources.

Usage Guidelines Use this command to control Policy Engine pod placement across Kubernetes nodes.

external-services

Configures access to external services.

Command Modes Exec > Global Configuration

Syntax Description **external-services K8 service name** *service_name* **[ips** *ip_address* **| port** *port_number* **]**

K8 Service name *service_name*

Specify the Kubernetes or the external service name.

Must be a string of 1-63 characters in the k8-svc-name pattern. For information on the k8-svc-name pattern, see the Input Pattern Types section.

ips *ip_address*

Specify the IP address of the external service.

port *port_number*

Specify the port number of the external service.

Usage Guidelines Use this command to configure the access to external services.

label cdl-layer

Configures the CDL pods node affinity label.

Command Modes Exec > Global Configuration

Syntax Description **cdl-layer { key** *label_key* **| value** *label_value*}

key *label_key*

Specify the label key.

Must be a string.

value *label_value*

Specify the label value.

Must be a string.

Usage Guidelines Use this command to configure the CDL.

label oam-layer

Configures the OAM pods node affinity label.

Command Modes Exec > Global Configuration

Syntax Description **oam-layer { key** *label_key* **| value** *label_value*}

key *label_key*

Specify the label key.

Must be a string.

value *label_value*

Specify the label value.

Must be a string.

Usage Guidelines Use this command to configure the OAM pods node affinity label.

label protocol-layer

Configures the protocol layer pod node affinity label.

Command Modes Exec > Global Configuration

Syntax Description **protocol-layer { key** *label_key* **| value** *label_value*}

key *label_key*

Specify the label key.

Must be a string.

value *label_value*

Specify the label value.

Must be a string.

Usage Guidelines Use this command to configure the protocol layer pod node affinity label.

label service-layer

Configures the service pods node affinity label.

Command Modes Exec > Global Configuration

Syntax Description **service-layer { key** *label_key* **| value** *label_value*}

key *label_key*

Specify the label key.

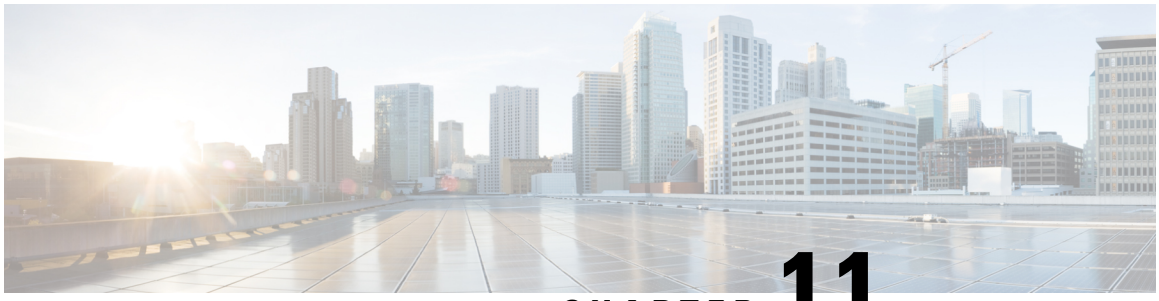
Must be a string.

value *label_value*

Specify the label value.

Must be a string.

Usage Guidelines Use this command to configure the service pods node affinity label.



CHAPTER 11

Input Pattern Types

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arg-type

```
Pattern:
'[^\*].*|..+'; // must not be single '*'

Pattern:
'\*'
```

This statement can be used to hide a node from some, or all, northbound interfaces. All nodes with the same value are considered a hide group and are treated the same with regards to being visible or not in a northbound interface.

A node with an hidden property is not shown in the northbound user interfaces (CLI and Web UI) unless an 'unhide' operation is performed in the user interface.

The hidden value 'full' indicates that the node must be hidden from all northbound interfaces, including programmatical interfaces such as NETCONF. The value '*' is not valid. A hide group can be unhidden only if this is explicitly allowed in the confd.conf(5) daemon configuration.

Multiple hide groups can be specified by giving this statement multiple times. The node is shown if any of the specified hide groups is given in the 'unhide' operation. If a mandatory node is hidden, a hook callback function (or similar) might be needed in order to set the element

crypt-hash

```
Pattern:
'$0$.*'
  '|$1$[a-zA-Z0-9./]{1,8}$[a-zA-Z0-9./]{22}'
  '|$5$(rounds=\d+$)?[a-zA-Z0-9./]{1,16}$[a-zA-Z0-9./]{43}'
  '|$6$(rounds=\d+$)?[a-zA-Z0-9./]{1,16}$[a-zA-Z0-9./]{86}'
```

The **crypt-hash** type is used to store passwords using a hash function. The algorithms for applying the hash function and encoding the result are implemented in various UNIX systems as the function crypt(3).

A value of this type matches one of the forms:

- 0<clear text password>
- $<id>$<salt>$<password hash>
- $<id>$<parameter>$<salt>$<password hash>

The '0' prefix signals that the value is clear text. When such a value is received by the server, a hash value is calculated, and the string '$<id>$<salt>$' or $<id>$<parameter>$<salt>$ is prepended to the result. This value is stored in the configuration data store.

If a value starting with '$<id>$', where <id> is not '0', is received, the server knows that the value already represents a hashed value, and stores it as is in the data store.

When a server needs to verify a password given by a user, it finds the stored password hash string for that user, extracts the salt, and calculates the hash with the salt and given password as input. If the calculated hash value is the same as the stored value, the password given by the client is accepted.

This type defines the following hash functions:

Id	Hash Function	Feature
1	MD5	crypt-hash-md5
5	SHA-256	crypt-hash-sha-256
6	SHA-512	crypt-hash-sha-512

The server indicates support for the different hash functions by advertising the corresponding feature.

Reference:

- IEEE Std 1003.1-2008 - crypt() function
- RFC 1321: The MD5 Message-Digest Algorithm
- FIPS.180-3.2008: Secure Hash Standard

date-and-time

```
Pattern:
'\d{4}-\d{2}-\d{2}T\d{2}:\d{2}:\d{2}(\.\d+)?'
 '(Z|[\+\-]\d{2}:\d{2})'
```

The date-and-time type is a profile of the ISO 8601 standard for representation of dates and times using the Gregorian calendar. The profile is defined by the date-time production in Section 5.6 of RFC 3339. The date-and-time type is compatible with the dateTime XML schema type with the following notable exceptions:

1. The date-and-time type does not allow negative years.
2. The date-and-time time-offset -00:00 indicates an unknown time zone (see RFC 3339) while -00:00 and +00:00 and Z all represent the same time zone in dateTime.
3. The canonical format (see below) of data-and-time values differs from the canonical format used by the dateTime XML schema type, which requires all times to be in UTC using the time-offset 'Z'.

This type is not equivalent to the DateAndTime textual convention of the SMIv2 since RFC 3339 uses a different separator between full-date and full-time and provides higher resolution of time-secfrac. The canonical format for date-and-time values with a known time zone uses a numeric time zone offset that is calculated using the device's configured known offset to UTC time.

A change of the device's offset to UTC time will cause date-and-time values to change accordingly. Such changes might happen periodically in case a server follows automatically daylight saving time (DST) time zone offset changes. The canonical format for date-and-time values with an unknown time zone (usually referring to the notion of local time) uses the time-offset -00:00.

Reference:

- RFC 3339: Date and Time on the Internet: Timestamps
- RFC 2579: Textual Conventions for SMIv2
- XSD-TYPES: XML Schema Part 2: Datatypes Second Edition

domain-name

```
Pattern:
'((([a-zA-Z0-9_]([a-zA-Z0-9\-_]){0,61})?[a-zA-Z0-9]\.)*'
 '([a-zA-Z0-9_]([a-zA-Z0-9\-_]){0,61})?[a-zA-Z0-9]\.?)'
 '|\.'
```

The domain-name type represents a DNS domain name. The name must fully qualified whenever possible. Internet domain names are only loosely specified. Section 3.5 of RFC 1034 recommends a syntax (modified in Section 2.1 of RFC 1123). The Pattern above is intended to allow for current practice in domain name use, and some possible future expansion. It is designed to hold various types of domain names, including names used for A or AAAA records (host names) and other records, such as SRV records.

The Internet host names have a stricter syntax (described in RFC 952) than the DNS recommendations in RFCs 1034 and 1123, and that systems that want to store host names in schema nodes using the domain-name type are recommended to adhere to this stricter standard to ensure interoperability.

The encoding of DNS names in the DNS protocol is limited to 255 characters. Since the encoding consists of labels prefixed by a length bytes and there is a trailing NULL byte, only 253 characters can appear in the textual dotted notation.

The description clause of schema nodes using the domain-name type must describe when and how these names are resolved to IP addresses. The resolution of a domain-name value may require to query multiple DNS records. For example, A for IPv4 and AAAA for IPv6. The order of the resolution process and which DNS record takes precedence can either be defined explicitly or may depend on the configuration of the resolver.

Domain-name values use the US-ASCII encoding. Their canonical format uses lowercase US-ASCII characters. Internationalized domain names MUST be A-labels as per RFC 5890.

Reference:

- RFC 952: DoD Internet Host Table Specification
- RFC 1034: Domain Names - Concepts and Facilities
- RFC 1123: Requirements for Internet Hosts -- Application and Support
- RFC 2782: A DNS RR for specifying the location of services (DNS SRV)
- RFC 5890: Internationalized Domain Names in Applications (IDNA): Definitions and Document Framework

dotted-quad

Pattern:

```
'(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}'
 '([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])'
```

An unsigned 32-bit number expressed in the dotted-quad notation, that is, four octets written as decimal numbers and separated with the '.' (full stop) character.

hex-list

Pattern:

```
'(([0-9a-fA-F]){2}(:([0-9a-fA-F]){2})*)?'
```

DEPRECATED: Use yang:hex-string instead. There are no plans to remove tailf:hex-list. A list of colon-separated hexa-decimal octets, for example '4F:4C:41:71'.

The statement tailf:value-length can be used to restrict the number of octets. Using the 'length' restriction limits the number of characters in the lexical representation

hex-string

Pattern:
'([0-9a-fA-F]{2}(:[0-9a-fA-F]{2})*)?'

A hexadecimal string with octets represented as hex digits separated by colons. The canonical representation uses lowercase characters.

ipv4-address

Pattern:
'(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}'
'([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])'
'(%[\p{N}\p{L}]+)?'

The ipv4-address type represents an IPv4 address in dotted-quad notation. The IPv4 address may include a zone index, separated by a % sign. The zone index is used to disambiguate identical address values. For link-local addresses, the zone index will typically be the interface index number or the name of an interface. If the zone index is not present, the default zone of the device will be used. The canonical format for the zone index is the numerical format.

ipv4-address-and-prefix-length

Pattern:
'(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}'
'([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])'
'/(([0-9])|([1-2][0-9])|(3[0-2]))'

The ipv4-address-and-prefix-length type represents a combination of an IPv4 address and a prefix length. The prefix length is given by the number following the slash character and must be less than or equal to 32.

ipv4-address-no-zone

Pattern:
'[0-9\.]*'

An IPv4 address is without a zone index and derived from ipv4-address that is used in situations where the zone is known from the context and hence no zone index is needed.

ipv4-prefix

Pattern:
'(([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])\.){3}'
'([0-9]|[1-9][0-9]|1[0-9][0-9]|2[0-4][0-9]|25[0-5])'
'/(([0-9])|([1-2][0-9])|(3[0-2]))'

The ipv4-prefix type represents an IPv4 address prefix. The prefix length is given by the number following the slash character and must be less than or equal to 32.

A prefix length value of 'n' corresponds to an IP address mask that has n contiguous 1-bits from the most significant bit (MSB) and all other bits set to 0.

The canonical format of an IPv4 prefix has all bits of the IPv4 address set to zero that are not part of the IPv4 prefix.

ipv6-address

```
Pattern:
'((:|[0-9a-fA-F]{0,4}):)([0-9a-fA-F]{0,4}:){0,5}'
  '((([0-9a-fA-F]{0,4}:)?(:|[0-9a-fA-F]{0,4}))|'
  '(((25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])\.){3}'Pattern:
  '(25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])))'
  '(%[\p{N}\p{L}]+)?'
```

```
Pattern:
'(([^:]+:){6}(([^:]+:[^:]+)|(.*\..*))|'
 '((([^:]+:)*[^:]+)?::(([^:]+:)*[^:]+)?)'
 '(%.+)?'
```

The ipv6-address type represents an IPv6 address in full, mixed, shortened, and shortened-mixed notation. The IPv6 address may include a zone index, separated by a % sign.

The zone index is used to disambiguate identical address values. For link-local addresses, the zone index will typically be the interface index number or the name of an interface. If the zone index is not present, the default zone of the device will be used.

The canonical format of IPv6 addresses uses the textual representation defined in Section 4 of RFC 5952. The canonical format for the zone index is the numerical format as described in Section 11.2 of RFC 4007.

Reference:

- RFC 4291: IP Version 6 Addressing Architecture
- RFC 4007: IPv6 Scoped Address Architecture
- RFC 5952: A Recommendation for IPv6 Address Text Representation

ipv6-address-and-prefix-length

```
Pattern:
'((:|[0-9a-fA-F]{0,4}):)([0-9a-fA-F]{0,4}:){0,5}'
 '((([0-9a-fA-F]{0,4}:)?(:|[0-9a-fA-F]{0,4}))|'
 '(((25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])\.){3}'
 '(25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])))'
 '(/(([0-9])|([0-9]{2})|(1[0-1][0-9])|(12[0-8])))'
```

```
Pattern:
'(([^:]+:){6}(([^:]+:[^:]+)|(.*\..*))|'
```

```
'((([^:]+:)*[^:]+)?::(([^:]+:)*[^:]+)?)'
'(/.+)'
```

The ipv6-address-and-prefix-length type represents a combination of an IPv6 address and a prefix length. The prefix length is given by the number following the slash character and must be less than or equal to 128.

ipv6-address-no-zone

Pattern:

```
'[0-9a-fA-F:\.]*'
```

An IPv6 address without a zone index. This type, derived from ipv6-address, may be used in situations where the zone is known from the context and hence no zone index is needed.

Reference:

- RFC 4291: IP Version 6 Addressing Architecture
- RFC 4007: IPv6 Scoped Address Architecture
- RFC 5952: A Recommendation for IPv6 Address Text Representation

ipv6-prefix

Pattern:

```
'((:|[0-9a-fA-F]{0,4}):)([0-9a-fA-F]{0,4}:){0,5}'
 '((([0-9a-fA-F]{0,4}:)?(:|[0-9a-fA-F]{0,4}))|'
 '(((25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])\.){3}'Pattern:
 '(25[0-5]|2[0-4][0-9]|[01]?[0-9]?[0-9])))'
 '(/(([0-9])|([0-9]{2})|(1[0-1][0-9])|(12[0-8])))';
```

Pattern:

```
'(([^:]+:){6}(([^:]+:[^:]+)|(.*\..*))|'
 '((([^:]+:)*[^:]+)?::(([^:]+:)*[^:]+)?)'
 '(/.+)'
```

The ipv6-prefix type represents an IPv6 address prefix. The prefix length is given by the number following the slash character and must be less than or equal to 128.

A prefix length value of n corresponds to an IP address mask that has n contiguous 1-bits from the most significant bit (MSB) and all other bits set to 0.

The IPv6 address should have all bits that do not belong to the prefix set to zero. The canonical format of an IPv6 prefix has all bits of the IPv6 address set to zero that are not part of the IPv6 prefix. Furthermore, the IPv6 address is represented as defined in Section 4 of RFC 5952

Reference:

- RFC 5952: A Recommendation for IPv6 Address Text Representation

mac-address

Pattern:
'[0-9a-fA-F]{2}(:[0-9a-fA-F]{2}){5}'

The mac-address type represents an IEEE 802 MAC address. The canonical representation uses lowercase characters. In the value set and its semantics, this type is equivalent to the MacAddress textual convention of the SMIv2.

Reference:

- IEEE 802: IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture
- RFC 2579: Textual Conventions for SMIv2

object-identifier

Pattern:
'(([0-1](\.[1-3]?[0-9]))|(2\.(0|([1-9]\d*))))'
'(\.(0|([1-9]\d*)))*'

The object-identifier type represents administratively assigned names in a registration-hierarchical-name tree. The values of this type are denoted as a sequence of numerical non-negative sub-identifier values. Each sub-identifier value MUST NOT exceed 2^32-1 (4294967295). The Sub-identifiers are separated by single dots and without any intermediate whitespace.

The ASN.1 standard restricts the value space of the first sub-identifier to 0, 1, or 2. Furthermore, the value space of the second sub-identifier is restricted to the range 0 to 39 if the first sub-identifier is 0 or 1. Finally, the ASN.1 standard requires that an object identifier has always at least two sub-identifiers. The pattern captures these restrictions.

Although the number of sub-identifiers is not limited, module designers should realize that there may be implementations that stick with the SMIv2 limit of 128 sub-identifiers.

This type is a superset of the SMIv2 OBJECT IDENTIFIER type since it is not restricted to 128 sub-identifiers. Hence, this type SHOULD NOT be used to represent the SMIv2 OBJECT IDENTIFIER type; the object-identifier-128 type SHOULD be used instead.

Reference:

- ISO9834-1: Information technology - Open Systems
- Interconnection - Procedures for the operation of OSI
- Registration Authorities: General procedures and top arcs of the ASN.1 Object Identifier tree

object-identifier-128

Pattern:
'\d*(\.\d*){1,127}'

This type represents object-identifiers restricted to 128 sub-identifiers. In the value set and its semantics, this type is equivalent to the OBJECT IDENTIFIER type of the SMIv2.

Reference:

- RFC 2578: Structure of Management Information Version 2 (SMIv2)

octet-list

Pattern:
'(\d*(.\d*)*)?'

A list of dot-separated octets, for example '192.168.255.1.0'. The statement tailf:value-length can be used to restrict the number of octets. Using the 'length' restriction limits the number of characters in the lexical representation.

phys-address

Pattern:
'([0-9a-fA-F]{2}(:[0-9a-fA-F]{2})*)?'

Represents media- or physical-level addresses represented as a sequence octets, each octet represented by two hexadecimal numbers. Octets are separated by colons. The canonical representation uses lowercase characters. In the value set and its semantics, this type is equivalent to the PhysAddress textual convention of the SMIv2.

Reference:

- RFC 2579: Textual Conventions for SMIv2

sha-256-digest-string

Pattern:
'0.*'
'|5(rounds=\d+$)?[a-zA-Z0-9./]{1,16}$[a-zA-Z0-9./]{43}'

The sha-256-digest-string type automatically computes a SHA-256 digest for a value adhering to this type. A value of this type matches one of the forms:

- 0<clear text password>
- 5<salt>$<password hash>
- 5rounds=<number>$<salt>$<password hash>

The '0' prefix signals that this is plain text. When a plain text value is received by the server, a SHA-256 digest is calculated, and the string '5<salt>$' is prepended to the

result, where <salt> is a random 16 character salt used to generate the digest. This value is stored in the configuration data store. The algorithm can be tuned through the /confdConfig/cryptHash/rounds parameter, which if set to a number other than the default will cause '5rounds=<number>$<salt>$' to be prepended instead of only '5<salt>$'.

If a value starting with '5' is received, the server knows that the value already represents a SHA-256 digest, and stores it as is in the data store.

If a default value is specified, it must have a '5' prefix.

The digest algorithm used is the same as the SHA-256 crypt function used for encrypting passwords for various UNIX systems.

Reference:

- IEEE Std 1003.1-2008 - crypt() function FIPS.180-3.2008: Secure Hash Standard

sha-512-digest-string

Pattern:

```
'$0$.*'
 '|$6$(rounds=\d+$)?[a-zA-Z0-9./]{1,16}$[a-zA-Z0-9./]{86}'
```

The sha-512-digest-string type automatically computes a SHA-512 digest for a value adhering to this type. A value of this type matches one of the forms

- 0<clear text password>
- 6<salt>$<password hash>
- 6rounds=<number>$<salt>$<password hash>

The '0' prefix signals that this is plain text. When a plain text value is received by the server, a SHA-512 digest is calculated, and the string '6<salt>$' is prepended to the

result, where <salt> is a random 16 character salt used to generate the digest. This value is stored in the configuration data store. The algorithm can be tuned through the

/confdConfig/cryptHash/rounds parameter, which if set to a number other than the default will cause '6rounds=<number>$<salt>$' to be prepended instead of only '6<salt>$'.

If a value starting with '6' is received, the server knows that the value already represents a SHA-512 digest, and stores it as is in the data store.

If a default value is specified, it must have a '6' prefix. The digest algorithm used is the same as the SHA-512 crypt function used for encrypting passwords for various UNIX systems.

Reference:

- IEEE Std 1003.1-2008 - crypt() function FIPS.180-3.2008: Secure Hash Standard

size

Pattern:

```
'S(\d+G)?(\d+M)?(\d+K)?(\d+B)?'
```

A value that represents a number of bytes. An example could be S1G8M7K956B; meaning 1GB + 8MB + 7KB + 956B = 1082138556 bytes.

The value must start with an S. Any byte magnifier can be left out, for example, S1K1B equals 1025 bytes. The order is significant though, that is S1B56G is not a valid byte size.

In ConfD, a 'size' value is represented as an uint64.

uuid

Pattern:
```
'[0-9a-fA-F]{8}-[0-9a-fA-F]{4}-[0-9a-fA-F]{4}-'
 '[0-9a-fA-F]{4}-[0-9a-fA-F]{12}'
```

A Universally Unique IDentifier in the string representation defined in RFC 4122. The canonical representation uses lowercase characters. The following is an example of a UUID in string representation: f81d4fae-7dec-11d0-a765-00a0c91e6bf6.

Reference:

- RFC 4122: A Universally Unique IDentifier (UUID) URN Namespace

yang-identifier

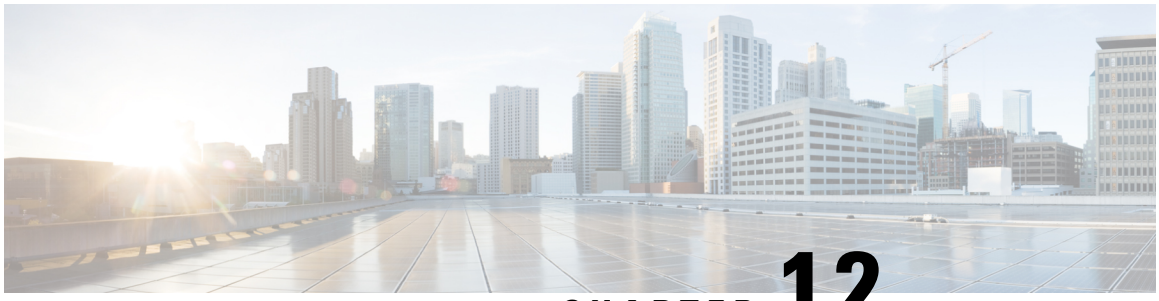
Pattern:
```
'[a-zA-Z_][a-zA-Z0-9\-_.]*'
```

Pattern:
```
'.|..|[^xX].*|.[^mM].*|..[^lL].*'
```

A YANG identifier string as defined by the 'identifier' rule in Section 12 of RFC 6020. An identifier must start with an alphabetic character or an underscore followed by an arbitrary sequence of alphabetic or numeric characters, underscores, hyphens, or dots. A YANG identifier MUST NOT start with any possible combination of the lowercase or uppercase character sequence 'xml'.

Reference:

- RFC 6020: YANG - A Data Modeling Language for the Network Configuration Protocol (NETCONF)



CHAPTER 12

PCF System KPI Diagnostics