Cisco Ultra Cloud Core CPC AAA- CLI Reference, Release 2026.03

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CONTENTS

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PREFACE

About this Guide ix

CHAPTER 1

Mobile Policy Executive Commands 1

aaa Authentication 2

cd 3

cdl clear sessions filter 3

cdl show indexes 3

cdl show sessions 4

cdl show status 4

show subscriber 5

commit abort 5

commit persist-id 6

compare 6

config exclusive 6

config shared 7

config terminal 7

deployment add config 8

deployment remove-config 8

deployment show-config 8

describe 9

exit 9

help 9

history 10

id 10

idle-timeout 10
ignore-leading-space 11
job 11
leaf-prompting 11
logout session 12
logout user 12
no 12
paginate 12
quit 13
screen-length 13
screen-width 13
send 14
show 14
show-defaults 14
smiuser add-group 15
smiuser add-user 15
smiuser assign-user-group 15
smiuser change-password 16
smiuser change-self-password 17
smiuser delete-group 17
smiuser delete-user 18
smiuser show-user 18
smiuser unassign-user-group 18
smiuser update-password-length 19
subscriber 19
system ops-center 19
system sync 20
system uuid-override 20
system ops-center-debug 20
terminal 21
timestamp 21
who 22

CHAPTER 2 **Mobile Policy Common Commands** 23

cluster 23
cps-license 24
db 24
db global-settings backup-settings 25
db balance 28
db global-settings db-replica 29
db global-settings db-tunings 29
db global-settings timers 32
db spr 38
debug 38
debug logging 39
debug logging sizing 40
debug splunk 42
debug tracing 42
debug backup-config 43
features 44
features patching 44
testing 45
pod management 45
system commands 46

CHAPTER 3 Mobile Policy CDL Client Commands 49
datastore external-endpoints 49
datastore external-endpoints connection-settings 49
datastore external-endpoints connection-settings channel 50
datastore external-endpoints connection-settings keep-alive 51
datastore primary-endpoint 51
datastore primary-endpoint connection-settings 52
datastore primary-endpoint connection-settings channel 52
datastore primary-endpoint connection-settings keep-alive 53

CHAPTER 4 Mobile Policy Infrastructure Commands 55
subversion 55

CHAPTER 5 Mobile Policy Types Commands 57

api unified 57

engine 58

engine environment 61

engine grpc 61

engine install-features 62

engine patching patch 62

engine properties 63

engine resources limits 63

engine resources requests 63

external-services 64

label cdl-layer 65

label oam-layer 65

label protocol-layer 65

label service-layer 66

CHAPTER 6 Input Pattern Types 67

arg-type 67

date-and-time 68

domain-name 69

dotted-quad 69

hex-list 70

hex-string 70

ipv4-address 70

ipv4-address-and-prefix-length 70

ipv4-address-no-zone 71

ipv4-prefix 71

ipv6-address 71

ipv6-address-and-prefix-length 72

ipv6-address-no-zone 72

ipv6-prefix 72

mac-address 73

mac-address 73

object-identifier 73
object-identifier-128 74
octet-list 74
phys-address 74
sha-256-digest-string 75
sha-512-digest-string 75
size 76
uuid 76
yang-identifier 76

CHAPTER 7 cnAAA Serviceability Diagnostics 79
cnAAA Serviceability Diagnostics 79

CHAPTER 8 cnAAA System KPI Diagnostics 81
cnAAA System KPI Diagnostics 81

CHAPTER 9 Advance Tuning 83
advance-tuning async-threading 83
advance-tuning istio-resource-control engine concurrency 84
advance-tuning redis-password 84
advance-tuning slice-access-control 84

CHAPTER 10 RADIUS Configurations 87
Configure the node for the RADIUS Endpoint Pod 87
RADIUS Resource Configuration 88
Ops-Center configuration for enabling IPv6 in RADIUS Endpoint 89
Configure the RADIUS Endpoint in cnAAA using Ops-Center 90
Ops Center configuration to enable ULB on RADIUS Endpoint 91
RADIUS Configuration 93
RADIUS AAA Proxy Settings 95

CHAPTER 11 Subscriber Migration 97
Migration commands 97

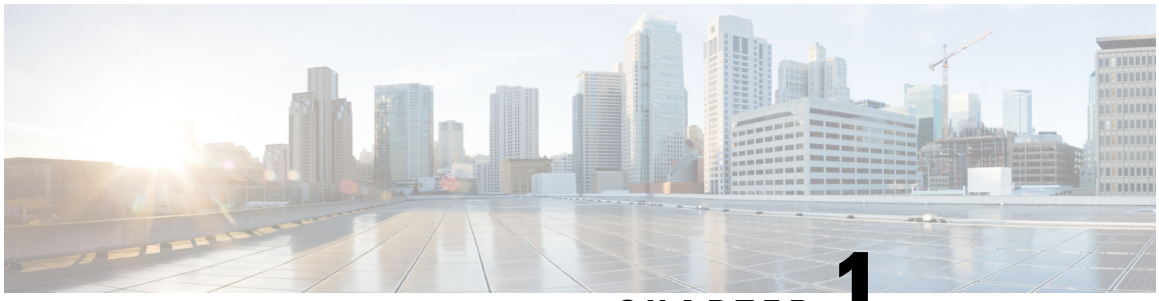
SOAP Kafka Proxy configuration 97

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 Converged Policy and Charging CLI Command Reference*, the document conventions, and the customer support details.

About this Guide



CHAPTER 1

Mobile Policy Executive Commands

- aaa Authentication, on page 2
- cd, on page 3
- cdl clear sessions filter, on page 3
- cdl show indexes, on page 3
- cdl show sessions, on page 4
- cdl show status, on page 4
- show subscriber, on page 5
- commit abort, on page 5
- commit persist-id, on page 6
- compare, on page 6
- config exclusive, on page 6
- config shared, on page 7
- config terminal, on page 7
- deployment add config, on page 8
- deployment remove-config , on page 8
- deployment show-config, on page 8
- describe, on page 9
- exit, on page 9
- help, on page 9
- history, on page 10
- id, on page 10
- idle-timeout, on page 10
- ignore-leading-space, on page 11
- job, on page 11
- leaf-prompting, on page 11
- logout session, on page 12
- logout user, on page 12
- no, on page 12
- paginate, on page 12
- quit, on page 13
- screen-length, on page 13
- screen-width, on page 13
- send, on page 14

- show, on page 14
- show-defaults, on page 14
- smiuser add-group, on page 15
- smiuser add-user, on page 15
- smiuser assign-user-group, on page 15
- smiuser change-password, on page 16
- smiuser change-self-password, on page 17
- smiuser delete-group, on page 17
- smiuser delete-user, on page 18
- smiuser show-user, on page 18
- smiuser unassign-user-group, on page 18
- smiuser update-password-length, on page 19
- subscriber, on page 19
- system ops-center, on page 19
- system sync, on page 20
- system uuid-override, on page 20
- system ops-center-debug, on page 20
- terminal, on page 21
- timestamp, on page 21
- who, on page 22

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 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.

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.

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 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 config

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.

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-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 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

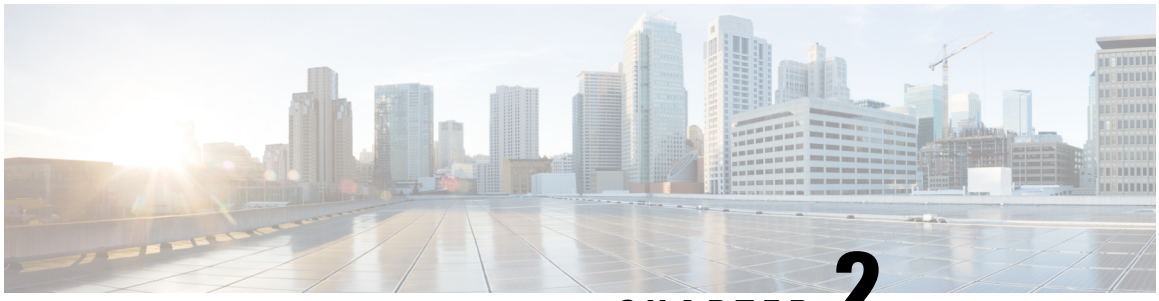
Exec

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

- cluster, on page 23
- cps-license, on page 24
- db, on page 24
- db global-settings backup-settings, on page 25
- db balance, on page 28
- db global-settings db-replica, on page 29
- db global-settings db-tunings, on page 29
- db global-settings timers, on page 32
- db spr, on page 38
- debug, on page 38
- debug logging, on page 39
- debug logging sizing, on page 40
- debug splunk, on page 42
- debug tracing, on page 42
- debug backup-config, on page 43
- features, on page 44
- features patching, on page 44
- testing, on page 45
- pod management, on page 45
- system commands, on page 46

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

Registers the cnAAA license.

Command Modes Exec > Global Configuration

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

cps-licence *license_name*

Specify the feature name.

Must be a string.

encrypted-key *key*

Specify the encrypted key.

Must be a string.

Usage Guidelines Use this command to registers the cnAAA license.

db

Configures the database parameter.

Product cnAAA

Privilege Security Administrator, Administrator

Syntax Description **db { balance shard count** *number_of_shard* **| global-settings { db-replica** *number_of_replica* **| timers { catchup-timeout-millis** *catchup_timeout* **| election-timeout-millis** *election_timeout* **| heartbeat-interval-millis** *heartbeat_interval | db-user-name MongoDB_username password PlainTextPassword* **| } } | spr shard-count** *number_of_spr_shards* **}**

balance shard count *number_of_shard*

Specify to abort commit. Specify the persist ID.

Must be an integer.

db-replica *number_of_replica*

Specify the number of database replicas.

Must be an integer.

catchup-timeout-millis *catchup_timeout*

Specify the catchup timeout in milliseconds.

Must be an integer.

election-timeout-millis *election_timeout*

Specify the election timeout in milliseconds.

Must be an integer.

heartbeat-interval-millis *heartbeat_interval*

Specify the heartbeat interval in milliseconds.

Must be an integer.

db-user-name *MongoDB_username* password *PlainTextPassword*

Specify the MongoDB database username and password.

spr shard-count*number_of_spr_shards*

Specify the number of SPR shards.

Must be an integer.

Usage Guidelines Use this command to configure the database parameter.

db global-settings backup-settings

Configures the backup settings for replica sets.

Command Modes Exec > Global Configuration

Syntax Description **db global-settings backup-settings** *backup-file-prefix* backup-frequency *backup-from-member* **exclude-dbs** local-backup-path **max-backup-time-seconds** *max-restore-time-seconds* **| purge-local-file** *scp-server* **} }**

backup-file-prefix

Command Modes Exec > Global Configuration

Syntax Description

backup-file-prefix

Backup file title prefix

Must be a string.

backup-frequency

Command Modes Exec > Global Configuration

Syntax Description **`backup-frequency`** *`{ day Day_which _backup_need _to_execute`* | `time-to-backup Backup_initiate_time,_HH:MM:SS}`

backup-from-member

Command Modes Exec > Global Configuration

Syntax Description **`backup-from-member`** *`member { primary`* | `primary-preferred | secondary | secondary-preferred}`

Usage Guidelines Backup shall be initiated from selected option.

exclude-dbs

Command Modes Exec > Global Configuration

Syntax Description

exclude-dbs

Must be a string.

List of dbs to be excluded being backed up.

local-backup-path

Command Modes Exec > Global Configuration

Syntax Description

local-backup-path

Local backup file path, Default: /data/db

Must be a string.

max-backup-time-seconds

Command Modes Exec > Global Configuration

Syntax Description

max-backup-time-seconds

Maximum time for each db to be backed up.

Must be an integer .

Default value 300

max-restore-time-seconds

Command Modes Exec > Global Configuration

Syntax Description

max-restore-time-seconds

Maximum time for each db to be restored.

Must be an integer .

Default value 300

purge-local-file

Command Modes Exec > Global Configuration

Syntax Description

purge-local-file

Deletes the locally created backup file after uploading to the backup server.

Type Boolean

scp-server

Command Modes Exec > Global Configuration

Syntax Description

Syntax Description

`scp-server` *{ host Ip_address* | password password | port server_port | remote-backup-path file_path | user-name user_name}

Backup server configuration parameters

Host

Command Modes Exec > Global Configuration

Syntax Description

host

Server name or IP Address

Must be a String.

Password

Command Modes Exec > Global Configuration

Syntax Description

password

Login password

Port

Command Modes Exec > Global Configuration

Syntax Description

port

Server port

Must be type of unsigned int

Default value is 22

remote-backup-path

Command Modes Exec > Global Configuration

Syntax Description

remote-backup-path

Absolute file path in scp server to be restored

Must be a String.

user-name

Command Modes Exec > Global Configuration

Syntax Description

user-name

Login user name

Must be a String.

user-name

Command Modes Exec > Global Configuration

Syntax Description

user-name

Login user name

Must be a String.

db balance

Configures the Balance database.

Command Modes Exec > Global Configuration

Syntax Description **`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 db-replica

Configures the replica count for the global DB.

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.

Usage Guidelines Use this command to configure the replica count for the global DB.

db-replica

Command Modes Exec > Global Configuration

Syntax Description

Global DB replica count

Must be an integer.

Default value is 3.

db global-settings db-tunings

Command Modes Exec > Global Configuration

Syntax Description **`db global-settings db-tunings`** *`{ concurrent-transactions-read | concurrent-transactions-write | oplog-size-mb | slowms | wired-tiger-cache-size-gb }`*

concurrent-transactions-read

Command Modes Exec > Global Configuration

Syntax Description

concurrent-transactions-read

Maximum number of concurrent read transactions allowed into the storage engine.

Must be an integer.

Default value is 16.

concurrent-transactions-write

Command Modes Exec > Global Configuration

Syntax Description

concurrent-transactions-write

Maximum number of concurrent write transactions allowed into the storage engine.

Must be an integer.

Default value is 16.

oplog-size-mb

Command Modes Exec > Global Configuration

Syntax Description

oplog-size-mb

OpLog Size(in MB) for data-bearing members.

Must be an integer from range 3072..5120.

Default value is 3072.

Slowms

Command Modes Exec > Global Configuration

Syntax Description

slowms (in milliseconds)

(in milliseconds) Operations that run for longer than this threshold are considered slow.

Must be an integer.

Default value is 500.

wired-tiger-cache-size-gb

Command Modes Exec > Global Configuration

Syntax Description

wired-tiger-cache-size-gb

Maximum size of the internal cache that WiredTiger uses for all data.

Must be an integer from range 1 .. 5.

Default value is 2.

db global-settings db-user-name

db-user-name

Command Modes Exec > Global Configuration

Syntax Description

Uses Mongodb user name for authentication.

Must be a String.

db global-settings enable-database-encryption

Command Modes Exec > Global Configuration

Syntax Description

Enable-database-encryption.

Must be of type Boolean.

Default value is false.

db global-settings enable-tmpfs

Command Modes Exec > Global Configuration

Syntax Description

enable-tmpfs:

Must be of type Boolean.

Default value is false.

db global-settings password

Command Modes Exec > Global Configuration

Syntax Description

password:

Mongodb password for authentication.

db global-settings resource

Command Modes Exec > Global Configuration

Syntax Description

resource { cpu | memory }

Pod resource configuration.

Cpu

Command Modes Exec > Global Configuration

Syntax Description

cpu { limit cpu_limit_in_ millicores |request cpu_resource_request_in_millicores }

CPU resource requests and limit configuration.

Memory

Command Modes Exec > Global Configuration

Syntax Description

memory { limit memory_limit_in_mb | request memory_request_in_mb }

Memory resource requests and limit configuration.

db global-settings timers

Configures global MongoDB timers.

Command Modes Exec > Global Configuration

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

catchup-timeout-millis *catchup_timeout*

Command Mode

Exec > Global Configuration

Specify the global catchup timeout period, in milliseconds.

Must be an integer.

Default Value: 2000.

connect-timeout-millis

Command Mode

Exec > Global Configuration

connect-timeout-millis

MongoClient driver wait time for a connection to open before timing out.

Must be an integer.

Default Value: 2000.

election-timeout-millis *election_timeout*

Command Mode

Exec > Global Configuration

Specify the global election timeout period, in milliseconds.

Must be an integer.

Default Value: 2000.

heartbeat-interval-millis *heartbeat_interval*

Command Mode

Exec > Global Configuration

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.

server-selection-timeout-millis

Command Mode

Exec > Global Configuration

MongoClient driver wait time for server selection to succeed, before throwing an exception.

Must be an integer.

Default Value: 2000.

socket-timeout-millis

Command Mode

Exec > Global Configuration

MongoClient driver wait time to send or receive a request before timing out.

Must be an integer.

Default Value: 2000.

db global-settings volume-storage-class

Command Mode

Exec > Global Configuration

volume-storage-class:

Volume storage class if use-volume-claims is enabled.

Values can be default or local.

Default value is default.

db scdb replica-name

Command Mode

Exec > Global Configuration

Sample configuration

```
db scdb replica-name sdb-subscriber1
port 65001
interface vlan 2400
storage   5
resource cpu limit 6000
resource memory limit 112000
replica-set-label key smi.cisco.com/node-type
replica-set-label value oam
member-configuration member sdb-rs1-arbiter
host 10.192.1.24
arbiter true
site local
exit
member-configuration member sdb-rs1-s1-m1
host 10.192.1.22
arbiter false
priority 102
site local
exit
member-configuration member sdb-rs1-s1-m2 host 10.192.1.23 arbiter false  priority 101 site
 local
exit
exit
```

replica-name

Specify the name of the replica-set.

Must be a string.

Port

Specify the port for replica set. Must be an integer. Default Value: 27720.

db-path

Specify the data path for the replica set.

Must be a String. Default Value: /data/db.

Interface

Specify the Interface for Mongo.

Must be a String.

resource cpu limit

Specify the CPU resource limit in millicores.

Must be an integer.

Input range value: 100 to 1000000.

resource cpu request

Specify the CPU resource request in millicores.

Must be an integer.

Input range value: 100 to 1000000.

resource memory limit

Specify the CPU resource limit in megabytes.

Must be an integer.

Input range value: 100 to 200000.

db scdb replica-name <replica-name> storage <integer-value>

This value specifies the storage size allocated to the replica set.

resource memory request

Specify the CPU resource request in megabytes.

Must be an integer.

Input range value: 100 to 200000.

replica-set-label key KEY_NAME **value** value

Specify the replica set pod node affinity label key value.

member-configuration member member_name

host

Mongo host (Enter IP Address).

Must be a String.

arbiter

If role of member is arbiter, value shall be set to true.

Default Value: false.

priority

Specify the member priority for this replica-set.

Must be an integer.

site

Member in local or remote cluster.

Default value: local

db scdb replica-name <replica-name> storage <integer-value>

db scdb execute backup-data

Command Mode

Exec

Syntax Description

db scdb execute backup-data

Initiate backup.

db scdb execute restore-data

Command Mode

Exec

Syntax Description

db scdb execute restore-data

Restore data from backup.

db scdb execute password encrypt-password

Command Mode

Exec

Syntax Description

password encrypt-password plain-text <*PlainTextPassword*>

Encrypts a plain text password.

db scdb execute password decrypt-password

Command Mode

Exec

Syntax Description

password decrypt-password encrypted-text <*EncryptedPassword*>

Decrypts an encrypted password.

show running-config

Command Mode

Exec

Syntax Description

show running-config

Display the current configuration.

Show system status

Command Mode

Exec

Syntax Description

show system status

Display status of the system.

show db scdb replica-set-status

Command Mode

Exec

Syntax Description

show db scdb replica-set-status

Show replica set status.

show helm charts

Command Mode

Exec

Syntax Description

show helm charts

Display helm release details.

Show replica set status.

nacm rule-list

Command Mode

Exec

Syntax Description

nacm `rule-list` *`<rule-name>`* `group` *`<group-name>`* `cmdrule` *`<cmdrule-name>`* command *`<command to restrict>`* access-operations exec action deny

Specifies access restrictions for a user group.

nacm rule-list

Command Mode

Exec

Syntax Description

nacm `rule-list` *`<rule-name>`* `group` *`<group-name>`* `cmdrule` *`<cmdrule-name>`* command *`<command to restrict>`* access-operations exec action deny

Specifies access restrictions for a user group.

db spr

Configures the SPR database.

Command Modes

Exec > Global Configuration

Syntax Description

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 } }**

default-level *default_level*

Specify the default level that must be logged.

Must be one of the following:

- trace
- debug
- info
- warn
- error
- off

logger *logger_utility*

Specify the logging utility name.

Must be a string.

debug tracing type *tracing_type*

Specify the tracing type.

Must be one of the following:

- OPENTRACING_JAEGER
- DISABLED

Default Value: DISABLED.

host *host_address*

Specify the host address of the Jaeger agent.

port *port_number*

Specify the port number of the Jaeger agent.

Usage Guidelines Use this command to configure debug information.

debug logging

Configures the logging parameters.

Command Modes Exec > Global Configuration

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

default-level *default_level*

Specify the default level that must be logged.

Must be one of the following:

- trace
- debug
- info
- warn
- error
- off

Usage Guidelines Use this command to configure the logging parameters.

debug logging sizing

Configures the storage and rotation parameters for system logs.

Command Modes

Exec > Global Configuration

Syntax

```
debug logging sizing { storage-size size_gb | ocs-log { max-index index_count | max-file-size
 size_mb } | bng-log { max-index index_count | max-file-size size_mb } | audit-log { max-index
 index_count | max-file-size size_mb } | api-log { maxfilesize size_mb | maxhistory hours
| totalcapsize cap_gb } | app-log { maxfilesize size_mb | maxhistory minutes | totalcapsize
 cap_gb } | engine-log { maxfilesize size_mb | maxhistory minutes | totalcapsize cap_gb }
}
```

ocs-log max-file-size *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

ocs-log max-index *index_count*

Specify the maximum number of files to retain after rotate.

Must be an integer. Default/minimum 15 and maximum is 21.

bng-log max-index *index_count*

Specify the maximum number of files to retain after rotate.

Must be an integer. Default/minimum 15 and maximum is 21.

bng-log max-file-size *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

audit-log max-index *index_count*

Specify the maximum number of files to retain after rotate.

Must be an integer. Default/minimum 15 and maximum is 21.

audit-log max-file-size *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

api-log maxfilesize *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

api-log maxhistory *hours*

Specifies how long logs are retained before deletion (in hours).

Must be an integer. Range 1 to 72. Default 72.

api-log totalcapsize *cap_gb*

Defines the total storage allocated for each log type (in GB).

Must be an integer. Range 1 to 1000. Default 300.

app-log maxfilesize *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

app-log maxhistory *minutes*

Specifies how long logs are retained before deletion (in minutes).

Must be an integer. Range 1 to 4320. Default 4320.

app-log totalcapsize *cap_gb*

Defines the total storage allocated for each log type (in GB).

Must be an integer. Range 1 to 1000. Default 500.

engine-log maxfilesize *size_mb*

Specify the maximum log file size in MB.

Must be an integer. Range from 10 to 300. Default 200.

engine-log maxhistory *minutes*

Specifies how long logs are retained before deletion (in minutes).

Must be an integer. Range 1 to 4320. Default 4320.

engine-log totalcapsize *cap_gb*

Defines the total storage allocated for each log type (in GB).

Must be an integer. Range 1 to 1000. Default 300.

Use this command to configure the log rotation and storage sizing for various system components.

Note Once the storage-size is configured, this config will not be allowed to remove or reduce size.

debug splunk

Configures the Splunk parameters.

Command Modes

Exec > Global Configuration

Syntax Description

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

batch-count *batch_count*

Specify the maximum number of events to send per batch.

Must be an integer.

Default Value: 10.

batch-interval-ms *batch_interval*

Specify the interval at which to send batched events, in milliseconds.

Must be an integer.

Default Value: 10000.

batch-size-bytes *batch_size*

Specify the maximum size of each batch of events, in bytes.

Must be an integer.

Default Value: 10240.

hec-token *hec_token*

Specify the Splunk HEC token.

Must be a string.

hec-url *hec_url*

Specify the protocol, hostname, and HTTP Event Collector port (8088 by default) of Splunk server.

Must be a string.

Usage Guidelines

Use this command to configure the Splunk parameters.

debug tracing

Configures the tracing parameters.

Command Modes

Exec > Global Configuration

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

jaegar agent *agent*

Specify the Jaegar agen'st name

host *host_name*

Specify the host name of the Jaegar agent.

port *port_number*

Specify the port number of the Jaegar agent.

debug tracing type *tracing_type*.

Specify the tracing type.

Must be one of the following:

- OPENTRACING_JAEGER
- DISABLED

Default Value: DISABLED.

Usage Guidelines Use this command to configure the tracing parameters.

debug backup-config

Configures the backup options.

Command Modes This table lists the mandatory options for backup-config:

Option	Description
backup-type	Specifies the type of backup to perform (all, PB, CRD, Ops-center).
crd-ingress	CRD ingress details (e.g., crd-api.pcf-pcf-engine-app-pcf-green.xx.xx.xx.xx.nip.io).
password	Password for authentication of PB or CRD.
pb-ingress	PB ingress details (e.g., pb.pcf-pcf-engine-app-pcf-green.xx.xx.xx.xx.nip.io).
scp-server-dest-backup-path	Destination path for backup files on the SCP server.
scp-server-user-ip	Host IP address of the SCP server.
scp-server-user-name	Username for the SCP server.

Option	Description
`scp-server-user-password`	Password for the SCP server user.
`svn-url`	SVN URL for Policy Builder export (e.g., `http://svn/repos//configuration`).
`username`	Username for authentication of PB or CRD.
`schedule-backup-daily`	Specifies the hour of the day when the backup operation should be executed (Values range from 00 to 23).
`schedule-backup-weekly`	Indicates the day of the week when the backup should occur (Values range from 1-7 and start with 1-Monday).

features

Configures the control configuration for the application features.

Command Modes Exec > Global Configuration

Syntax Description **`features`** `{ 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 { patching ingress-enabled true }
```

features patching

Enables or disables the Ingress API.

Command Modes Exec > Global Configuration

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

ingress-enabled { false | true }

Specify to enable or disable patching ingress, not secured.

Must be either "false" or "true".

Default Value: false.

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

testing

Configures the parameters for the Testing feature

Command Modes Exec > Global Configuration

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

code-coverage-enabled { false | true }

Specify to enable or disable code coverage reporting with jacoco.

Must be either "false" or "true".

Default Value: false.

development-mode-enabled { false | true }

Specify to enable or disable development mode.

Must be either "false" or "true".

Default Value: false.

enforce-affinity-rules { false | true }

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

Must be either "false" or "true".

Default Value: true.

subversion-ingress-enabled { false | true }

Specify if the subversion ingress is enabled.

Must be either "false" or "true".

Default Value: false.

Usage Guidelines Use this command to configure the parameters for the Testing feature.

pod management

Configuration to disable the optional pods:

Command Modes Exec > Global Configuration

Syntax Description `pods-management disable-pods <pod_name1> <pod_name2>`

Disables specified pod.

system commands

pcf-system about-system-info

Command Mode

Exec

Syntax Description

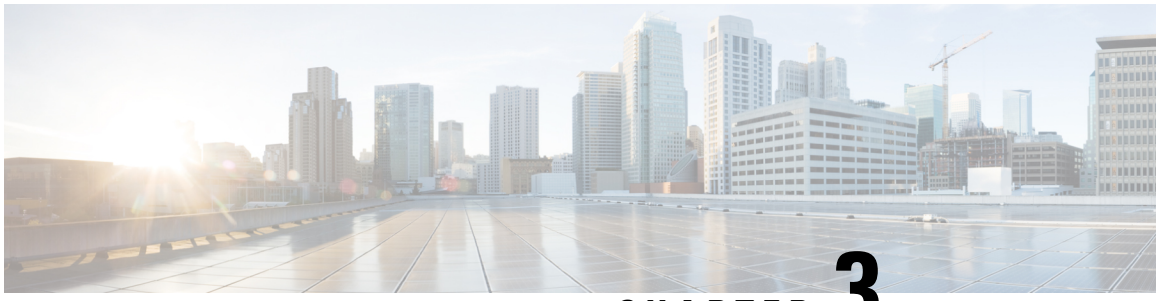
pcf-system about-system-info

This command displays the current system state, details the versions of all components, and lists the URLs for endpoints that are accessible from outside the system.

```
CPC VERSION

------------------------


CPC VERSION                    BUILD_2026.02.0.i55


CPC CORE COMPONENT VERSION

------------------------


pcf-beta-cncps-cnat-cps-infrastructure        BUILD_2026.02.0.i55

pcf-beta-cncps-cps-radius-ep                  BUILD_2026.02.0.i55

pcf-beta-cncps-etcd-cluster                   BUILD_2026.02.0.i55

pcf-beta-cncps-network-query                  BUILD_2026.02.0.i55

pcf-beta-cncps-ngn-datastore                  BUILD_2026.02.0.i55

pcf-beta-cncps-ops-center                     BUILD_2026.02.0.i55

pcf-beta-cncps-pcf-config                     BUILD_2026.02.0.i55

pcf-beta-cncps-pcf-dashboard                  BUILD_2026.02.0.i55

pcf-beta-cncps-pcf-engine-app-production-rjio BUILD_2026.02.0.i55

pcf-beta-cncps-pcf-oam-app                    BUILD_2026.02.0.i55

pcf-beta-cncps-pcf-services                   BUILD_2026.02.0.i55

pcf-beta-cncps-unified-api-proxy-ep           BUILD_2026.02.0.i55
```

```
CNDP VERSION
------------------------

cee-beta-cncps-cee-ops-center  2026.02.1.i05


ULB VERSION
------------------------

lbs-beta-ops-center            BUILD_2025.04.0.i18


DATABASE VERSION
------------------------

CDL VERSION                    2.2.0

MONGO VERSION                  v7.0.28


OS VERSION
------------------------

POD OS VERSION                 Ubuntu 22.04.5 LTS
NODE OS VERSION                Ubuntu 24.04.4 LTS


CPC ENDPOINT URLs
------------------------

Grafana              https://grafana.xx.xx.xxx.xx.nip.io
Control Center       https://pcf.controlcenter.xx.xx.xxx.xx.nip.io
```

```
Policy Builder
https://pb.pcf-beta-cncps-pcf-engine-app-production-rjio.xx.xx.xxx.xx.nip.io/pb

CPC Central
https://pb.pcf-beta-cncps-pcf-engine-app-production-rjio.xx.xx.xxx.xx.nip.io
```



CHAPTER 3

Mobile Policy CDL Client Commands

- datastore external-endpoints, on page 49
- datastore external-endpoints connection-settings, on page 49
- datastore external-endpoints connection-settings channel, on page 50
- datastore external-endpoints connection-settings keep-alive, on page 51
- datastore primary-endpoint, on page 51
- datastore primary-endpoint connection-settings, on page 52
- datastore primary-endpoint connection-settings channel, on page 52
- datastore primary-endpoint connection-settings keep-alive, on page 53

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.

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 **`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.

channel *channel_count*

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

Must be an integer.

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.

timeout-ms *timeout_ms*

Specify the timeout period in milliseconds.

Must be an integer.

port *port_number*

Specify the port number.

Must be an integer.

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 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 **`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 **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 **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* **}**

channel *channel_count*

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

Must be an integer.

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.

timeout-ms *timeout_ms*

Specify the timeout period in milliseconds.

Must be an integer.

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 **connection-settings { channel** *channel_count* **| keep-alive | timeout-ms** *timeout_ms* **}**

channel *channel_count*

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

Must be an integer.

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 **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 **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.

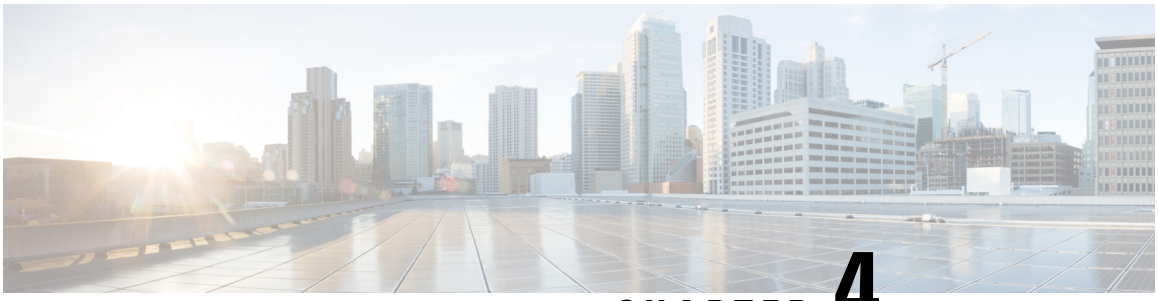
Must be an integer.

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 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*

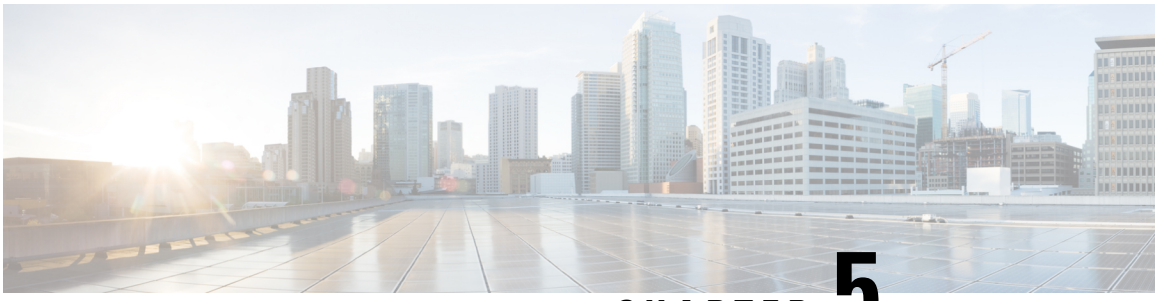
Specify the monitor-svn thread polling interval in seconds.

Must be an integer.

Default Value: 120.

Usage Guidelines

Use this command to configure the Subversion parameters.



CHAPTER 5

Mobile Policy Types Commands

- api unified, on page 57
- engine, on page 58
- engine environment, on page 61
- engine grpc, on page 61
- engine install-features, on page 62
- engine patching patch, on page 62
- engine properties, on page 63
- engine resources limits, on page 63
- engine resources requests, on page 63
- external-services, on page 64
- label cdl-layer, on page 65
- label oam-layer, on page 65
- label protocol-layer, on page 65
- label service-layer, on page 66

api unified

Configures the Engine API parameters.

Command Modes

Exec > Global Configuration

Syntax Description

`api unified { engine-group` *`engine_group`* **`| externalIPs`** *`ip_address`* **`| 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.

Must be an IP address.

api unified disable-http *true*

To disable the http service, use this option.

Usage Guidelines Use this command to configure the 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* **]| scheduling-affinity***false*
crdapi [**admin-db** [primary *primary_member_ip* | secondary *secondary_member_ip* | port *port*] | **crd-db-socket-timeout** *socket_timeout_value*
crd-mongo-cache-refresh-interval *mongo_cache_refresh_Interval_value*
crd-next-reload-delay-time *next_reload_delay_time_value*] | **policy-builder properties** | **resources** *resources_value*]**control-center** *true or false*

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 either "false" or "true".

Default Value: false.

environment *environment_variables*

Specify the environment name.

Must be a string.

grpc *grpc_configuration_options*

Specify the gRPC parameters.

crdapi ***Configure crd-api properties***

Specify the crdapi parameters.

policy-builder ***Policy Builder Configurations***

Specify the policy builder configurations.

resources ***Resources Configurations***

Set the Resource values.

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.

unified-api-replicas ***unified_api_count***

Specify the control center name used for Policy Engine.

Must be a string.

Usage Guidelines

Use this command to configure the engine parameters.

scheduling-affinity *false*

Disables scheduling affinity.

admin-db primary *primary_member_ip* | secondary *secondary_member_ip* | port *port*

Configures admin-db details for CRD operations.

policy-builder *policy-builder properties*

Set Policy Builder Configurations.

resources resources_value *true or false*

Set the Resource values .

engine control-center *Control Center Install*

Command Modes Exec > Global Configuration.

Syntax Description **control-center** *<true|false>*

Usage Guidelines Set the value true or false .

Use this command to install the control-center.

engine crdapi *Configure crd-api properties*

Command Modes Exec > Global Configuration

Syntax Description**crdapi [crd-db-socket-timeout crd_db_socket_timeout_value | crd-next-reload-delay-time crd_next_reload_delay_time_value]**

crd-db-socket-timeout Mongo DB Socket Timeout for CRD DB in milliseconds

crd-next-reload-delay-time

The delay when next crd cache build would happen in seconds.

Usage Guidelines Use this command to configure the crdapi parameters.

engine policy-builder *Policy Builder Configurations*

Command Modes Exec > Global Configuration.

Syntax Description: **policy-builder <property_name> <property_value>**

property_name :- Name of the property.

property_value :- Value of the property.

Usage Guidelines Use this command to configure the policy-builder parameters.

engine *<profile-name>* resources

Command Modes Exec > Global Configuration.

Syntax Description: `engine <profile-name> resources { requests { cpu <cores> | memory <GiB> } | limits { cpu <cores> | memory <GiB> } }`

requests cpu: Configures the CPU request in cores (Range: 1-5).

requests memory: Configures the memory request in GiB.

limits cpu: Configures the CPU limit in cores (Range: 5-32).

limits memory: Configures the memory limit in GiB.

Usage Guidelines Use this command to dynamically configure CPU and memory resources for specific engine profiles.

engine environment

Configures the environment variables exposed to engine-app pods.

Command Modes Exec > Global Configuration

Syntax Description **environment** *environment_name* **value** *value*

environment_name

Specify the 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 **grpc [externalIPs** *external_ip_address* **| port** *grpc_port_number* **]**

externalIPs *external_ip_address*

Specify the external IP address.

Must be an 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 **`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 installation feature parameters.

engine patching patch

Configures the patching parameters.

Command Modes Exec > Global Configuration

Syntax Description **`patching patch`** *`patch_id`* **`[ jar`** *`jar_to_patch`* **`| version`** *`jar_version_number`* **`]`**

patch_id

Specify the ID of the patch to apply.

Must be a string.

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.

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 `properties system_properties value value`

properties *system_properties*

Specify the 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 `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 **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.

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 in the pattern [a-z]([-a-z0-9]*[a-z0-9])?.

ips *ip_address*

Specify the IP address of the external service.

Must be an IP address.

port *port_number*

Specify the port number of the external service.

Must be a port number.

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 **`label 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.

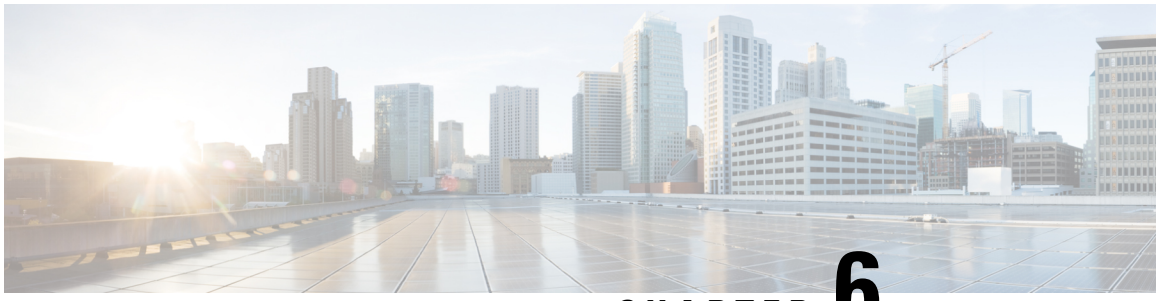
Must be a string.

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 6

Input Pattern Types

- arg-type, on page 67
- date-and-time, on page 68
- domain-name, on page 69
- dotted-quad, on page 69
- hex-list, on page 70
- hex-string, on page 70
- ipv4-address, on page 70
- ipv4-address-and-prefix-length, on page 70
- ipv4-address-no-zone, on page 71
- ipv4-prefix, on page 71
- ipv6-address, on page 71
- ipv6-address-and-prefix-length, on page 72
- ipv6-address-no-zone, on page 72
- ipv6-prefix, on page 72
- mac-address, on page 73
- mac-address, on page 73
- object-identifier, on page 73
- object-identifier-128, on page 74
- octet-list, on page 74
- phys-address, on page 74
- sha-256-digest-string, on page 75
- sha-512-digest-string, on page 75
- size, on page 76
- uuid, on page 76
- yang-identifier, on page 76

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

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

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

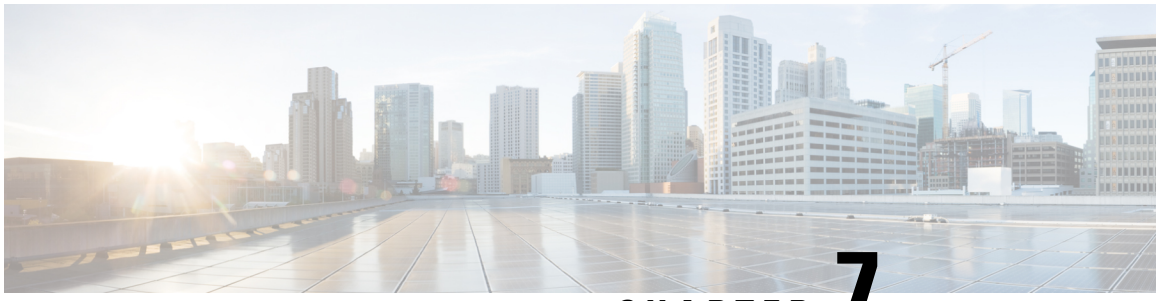
Pattern:
'[a-zA-Z_][a-zA-Z0-9\-_.]*'

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 7

cnAAA Serviceability Diagnostics

• cnAAA Serviceability Diagnostics, on page 79

cnAAA Serviceability Diagnostics

Displays the system diagnostics status for the description type.

Command Modes

Exec

Syntax Description

all

Specify to display the system diagnostic status as all

Must be a string.

cdl

Specify to display the system diagnostic status as cdl.

Must be a string.

db

Specify to display the system diagnostic status as db.

Must be a string.

splunk

Specify to display the system diagnostic status as splunk.

Must be a string.

alert

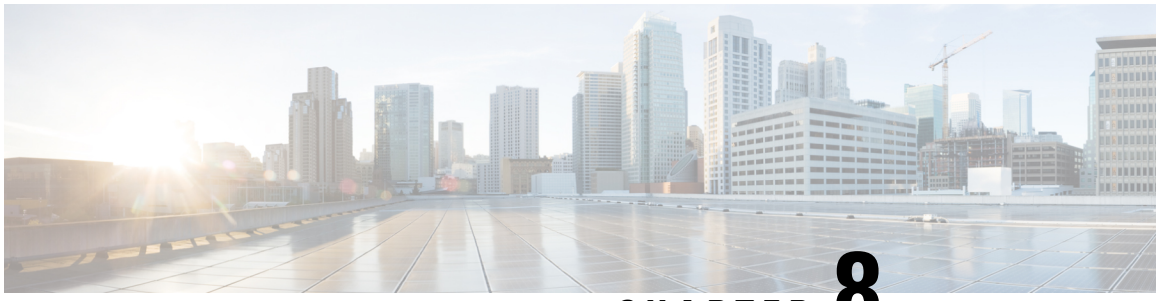
Specify to display the system diagnostic status as alert.

Must be a string.

Usage Guidelines

Use this command to display the diagnostic status.

cnAAA Serviceability Diagnostics



CHAPTER 8

cnAAA System KPI Diagnostics

• cnAAA System KPI Diagnostics, on page 81

cnAAA System KPI Diagnostics

Configures cnAAA system KPI diagnostics parameters.

Syntax Description

`cnAAA-system KpiDiagnostics` *`start_time end_time interface_name operation_name status_Code`*

start_time

Specify the start time.

After the start_time argument specify the value.

Must be a string.

end_time

Specify the end time.

After the end_time argument specify the value.

Must be a string.

interface_name

Specify the interface name.

After the interface_name argument specify the value.

Must be a string.

operation_name

Specify the operation name.

After the operation_name argument specify the value.

Must be a string.

status_Code

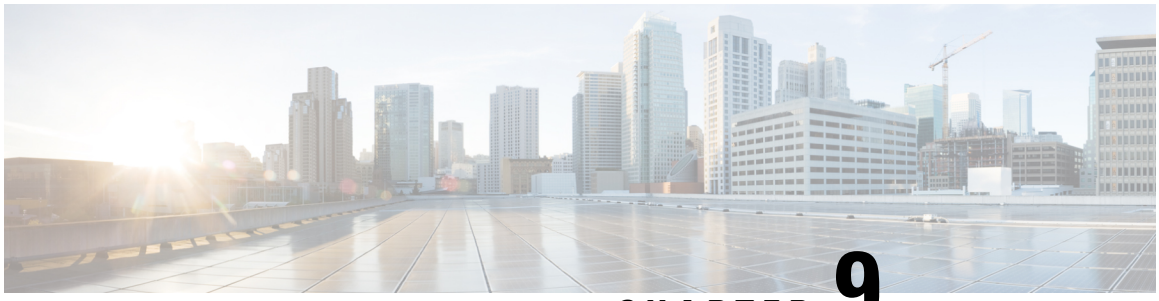
Specify the status code.

After the status_code argument specify the value.

Must be a string.

Usage Guidelines

Use this command to configure KPI diagnostics parameters. Enters the cnAAA system KPI diagnostics Configuration mode.



CHAPTER 9

Advance Tuning

- advance-tuning async-threading, on page 83
- advance-tuning istio-resource-control engine concurrency, on page 84
- advance-tuning redis-password, on page 84
- advance-tuning slice-access-control, on page 84

advance-tuning async-threading

Configures threading configuration for HTTP outgoing request from cnAAA.

Command Modes

Exec > Global Configuration

Syntax Description

advance-tuning async-threading | default-processing-threads *processing_threads* **| default-queue-size** *queue_size* **| default-worker-threads** *worker_threads* **|max-timeouts-to-reconnect** *max_timeout_to_reconnect* }

default-processing-threads *processing_threads*

Specify the default number of processing threads.

Must be an integer.

Default Value: 10.

default-queue-size *queue_size*

Specify the default size of the queue.

Must be an integer.

Default Value: 100.

default-worker-threads *workerThreads*

Specify the default number of worker threads.

Must be an integer.

Default Value: 20.

max-timeouts-to-reconnect *max_timeout_to_reconnect*

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 cnAAA.

advance-tuning istio-resource-control engine concurrency

Configures the istio-resource-control configuration for the engine.

Command Modes Exec > Global Configuration

Syntax Description **`advance-tuning istio-resource-control engine concurrency`** *`count }`*

advance-tuning istio-resource-control engine concurrency*count*

Specify the istio-resource-control configuration for engine.

Must be Integer

Default:6

Usage Guidelines Use this command to configure the istio-resource-control configuration for the engine.

advance-tuning redis-password

Configures the redis password.

Command Modes Exec > Global Configuration

Syntax Description **`advance-tuning redis-password`** *`password }`*

advance-tuning redis-password *password*

Specify the redis password.

Must be a String.

Usage Guidelines Use this command to configure the redis password.

advance-tuning slice-access-control

Configures the Network slice based access control for PDU sessions.

Command Modes Exec > Global Configuration

Syntax Description

`advance-tuning slice-access-control` *`{enable/disable}`*

advance-tuning slice-access-control *{enable/disable}*

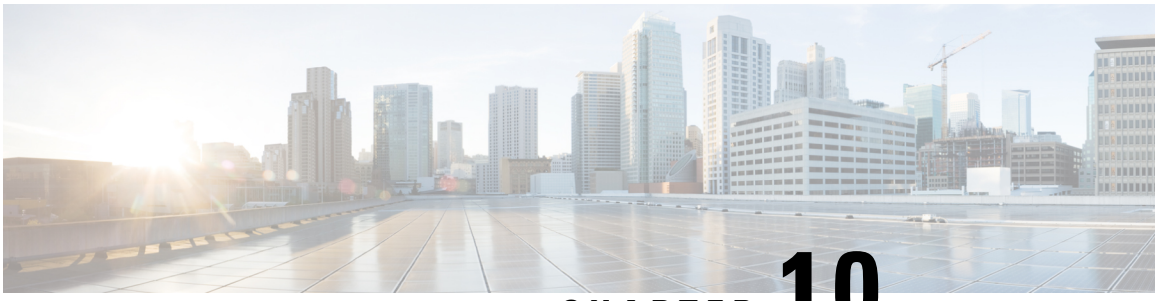
Specify the Enable/disable validation of sliceInfo in PDU sessions and reject for unsupported slices.

Must be a Boolean.

Default: false

Usage Guidelines

Use this command to configure the Enable/disable validation of sliceInfo in PDU sessions and reject for unsupported slices.



CHAPTER 10

RADIUS Configurations

This section covers all the RADIUS Configurations

- Configure the node for the RADIUS Endpoint Pod, on page 87
- RADIUS Resource Configuration, on page 88
- Ops-Center configuration for enabling IPv6 in RADIUS Endpoint, on page 89
- Configure the RADIUS Endpoint in cnAAA using Ops-Center, on page 90
- Ops Center configuration to enable ULB on RADIUS Endpoint, on page 91
- RADIUS Configuration, on page 93
- RADIUS AAA Proxy Settings, on page 95

Configure the node for the RADIUS Endpoint Pod

This section describes how to specify the node or host where the RADIUS endpoint must spawn the pod.

Note Configuration changes to the RADIUS endpoint cause the endpoint to restart automatically. Cisco recommends making such changes only within the maintenance window.

Mandatory RADIUS configuration

To configure the RADIUS server with essential parameters for optimal network performance and security, use the following configuration:

```
radius bind-ip <bind IP address>
radius replicas 2
radius settings request-timeout-ms 5000
radius settings max-tries  1
radius async-threading-configuration default-processing-threads 100
radius async-threading-configuration default-action-priority 5
radius async-threading-configuration default-action-threads 100
radius async-threading-configuration default-action-queue-size 400000
radius async-threading-configuration default-action-drop-oldest-when-full true
radius device-group ASR9K
  default-shared-secret     <secret value>
  default-coa-shared-secret <secret value>
  coa-port                  3799
 coa-timeout-seconds       3
  device <BNG Device Name>
```

```
   ip                 <BNG IP Address>
   shared-secret      <secret value>
   coa-shared-secret  <secret value>
   loopback-addresses [ <loopback addresses> ]
 exit
radius server-group <Server Group Name>
 servers <server name>
   primary              <primary OCS IP Address>
   secondary            <secondary OCS IP Address>
   nas-ip               <nas p address>
   accounting-port      1803
   authorization-port   1802
   auth-protocol        PAP
   radius-password      <radius password>
   shared-secret        <secret value>
   timeout-seconds      3
   test-message         false
   test-userid          test
   test-password        test123
   thread-pool-size     330
   max-proxy-queue-size 50000
       server-type   online (or) offline
   retries              0
 exit
radius properties grpc.executors
  value 5
exit
radius properties grpc.timeoutMs.processing
 value 5000
exit
radius properties io.netty.eventLoopThreads
  value 16
exit
radius properties parallelChannelCount
  value 5
exit
radius properties prometheusPort
  value 9099
exit
radius properties radiusCorePoolSize
  value 20
exit
radius properties radiusMaxQueue
  value 4000
exit
radius properties traps.tps
  value 4000
exit
radius properties udpMaxQueue
  value 4000
exit
radius properties udpPoolSize
 value 20
exit
```

RADIUS Resource Configuration

This section describes how to adjust CPU and memory requests and limits for the RADIUS endpoint pods so that resource allocation matches traffic demands and resource throttling is prevented.

radius resources

Command Modes: Exec > Global Configuration

Syntax Description:

```
radius resources { requests { cpu <cores> | memory <GiB> } | limits { cpu <cores> | memory
 <GiB> }
      }
```

requests cpu: Configures the CPU request in cores (Range: 1-5).

requests memory: Configures the memory request in GiB.

limits cpu: Configures the CPU limit in cores (Range: 5-32).

limits memory: Configures the memory limit in GiB.

Usage Guidelines Use this command to dynamically configure CPU and memory resources for radius pods.

Ops-Center configuration for enabling IPv6 in RADIUS Endpoint

To enable the IPv6 on the RADIUS Endpoint within CPC, complete the following configurations in Ops-Center.

General RADIUS settings

```
radius accounting-port 1813
radius authorization-port 1812
radius coa-port    1700
radius bind-ip 2001:ddff::1
radius settings request-timeout-ms 5000
radius settings max-tries  1
radius settings min-processing-time-millis 3000
radius settings backoff-time-millis 1000
```

BNG device group configurations

```
BNG Client Configuration
device bng01
  ip                2002:20:50:53::100/127
  shared-secret     cisco
  coa-shared-secret  cisco
  loopback-addresses [ 12.0.0.1 ]
 exit
```

RADIUS server group configuration

```
radius server-group grp1
 servers DEL_OCS
  primary              2002:20:50:52::100
  secondary            2002:20:50:52::101
  accounting-port      1803
  authorization-port   1802
  auth-protocol        PAP
  radius-password      test123
  shared-secret        cisco
  timeout-seconds      5
  test-message         false
  test-userid          test
  test-password        test123
  thread-pool-size     400
  max-proxy-queue-size 40000
```

```
  server-type   online (or) offline
  retries             3
 exit
exit
```

Configure the RADIUS Endpoint in cnAAA using Ops-Center

To configure the RADIUS Endpoint in cnAAA using Ops-Center, follow these steps:

Procedure

Step 1 Configure the RADIUS Device Group by defining shared secrets and loopback addresses for each BNG device.

```
radius device-group ASR9K
  default-shared-secret sh512
  default-coa-shared-secret aes256
  device dev1
    ip 10.1.2.12
    shared-secret aes128
    coa-shared-secret sh256
    loopback-addresses [12.3.1.2]
  exit
  device dev2
    ip 3.4.5.6
    shared-secret sh345
    coa-shared-secret aes111
    loopback-addresses [3.4.8.1]
  exit
```

Step 2 Configure the RADIUS Server Group by setting up primary and secondary server IPs, ports, server-type, and authentication protocols.

```
radius server-group grp1
  servers serv1
    primary 3.4.4.4
    secondary 5.5.5.3
    nas-ip 1.1.2.2
    accounting-port 8312
    authorization-port 1312
    auth-protocol PAP
    radius-password test123
    shared-secret sh233
    timeout-seconds 20
    test-message false
    test-userid test
    test-password test123
    thread-pool-size 10
    max-proxy-queue-size 3
    server-type   online (or) offline
  exit
```

Ops Center configuration to enable ULB on RADIUS Endpoint

To enable the ULB in cnAAA, configure the ops-center as follows:

1. Set the ULB parameter to "true" to activate the backend load balancing service.
2. If the ULB parameter is "false" the system uses default Kubernetes capabilities for traffic management.

General RADIUS Settings

```
cnaaa# show running-config radius | nomore

radius accounting-port 1812
radius authorization-port 1813
radius coa-port 2799

radius bind-ipv4 [ bind IPv4 address ]
radius bind-ipv6 [  bind IPv4 address ]
radius replicas 2
radius lbs-service true
radius settings request-timeout-ms 5000
radius settings max-tries 4
radius settings min-processing-time-millis 3000
radius settings backoff-time-millis 1000
```

Configuration Notes

- radius bind-ip host_address: Specifies the host address for the RADIUS binding.
- replicas number_of_replicas: Indicates the number of replicas.
- ULB-service boolean_value: Specifies whether the load balancing service is enabled (true or false).
- settings request-timeout-ms timeout_in_milliseconds: Sets the request timeout in milliseconds.
- settings max-tries max_attempts: Defines the maximum number of retry attempts.
- settings min-processing-time-millis min_processing_time_in_milliseconds: Sets the minimum processing time in milliseconds.
- settings backoff-time-millis backoff_time_in_milliseconds: Sets the backoff time in milliseconds.

RADIUS Device Group: ASR9K

```
radius device-group ASR9K

 default-shared-secret     sh512

 default-coa-shared-secret cisco

 device dev1

  ip                 10.1.2.12

  shared-secret  cisco

  coa-shared-secret  cisco

  loopback-addresses [ 12.3.1.2 ]

 exit
```

```
 device dev2
  ip                 3.4.5.6
  shared-secret      cisco
  coa-shared-secret  cisco
  loopback-addresses [ 3.4.8.1 ]
 exit
exit
```

Configuration Notes

- default-shared-secret cisco – Specifies the default shared secret for RADIUS communication.
- default-coa-shared- cisco – Specifies the default shared secret for CoA communication.
- device dev1 – Configures a RADIUS device with specific settings: ip– The IP address of the device.
- shared-secret cisco – The shared secret for communication with the device.
- coa-shared-secret cisco – The shared secret for CoA communication with the device.
- loopback-addresses – Specifies the loopback addresses for the device.

RADIUS Server Group: grp1

```
radius server-group grp1
 servers serv1
  primary              3.4.4.4
  secondary            5.5.5.3
  nas-ip               1.1.2.2
  accounting-port      8312
  authorization-port   1312
  auth-protocol        PAP
  radius-password      <password>
  shared-secret        <secret>
  timeout-seconds      20
  test-message         false
  server-type   online (or) offline
```

Configuration Notes

- servers serv1 – Specifies the servers within the group.
- primary– The primary server's IP address.

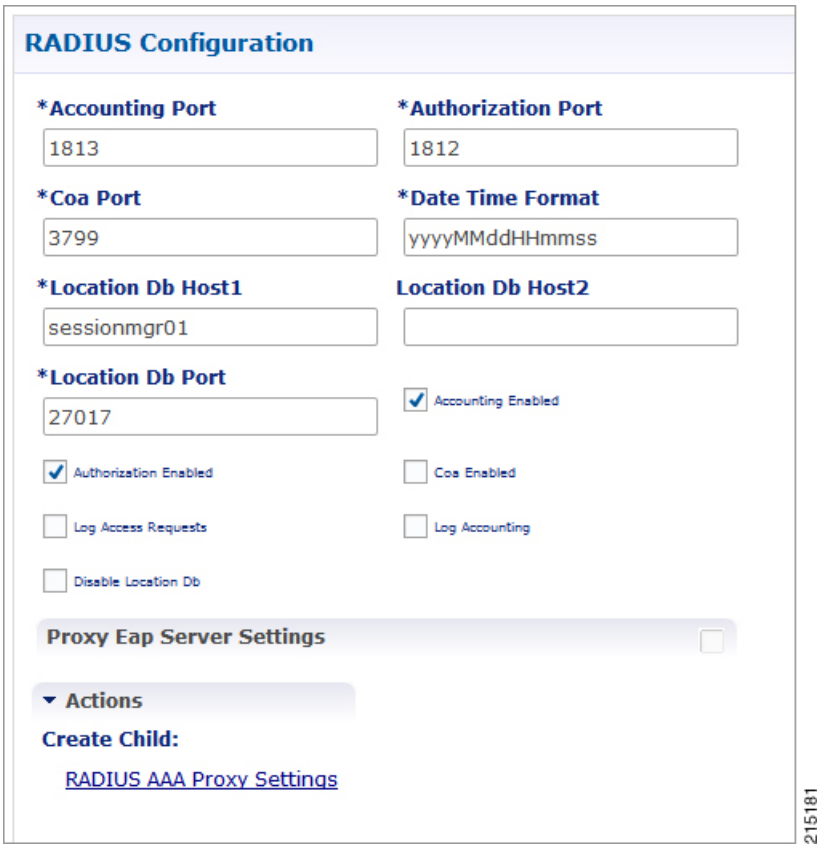
- secondary – The secondary server's IP address.
- nas-ip– The IP address of the Network Access Server (NAS).
- authorization-port – The port used for authorization requests within the server group.
- auth-protocol PAP – Specifies the authentication protocol used, in this case, PAP.
- radius-password cisco– The password used for RADIUS authentication.
- shared-secret cisco – The shared secret used for communication within the server group.
- timeout-seconds 20 – Specifies the timeout duration in seconds for server responses.
- test-message false – Indicates whether test messages are enabled or disabled.
- test-userid cisco – The user ID used for test purposes.
- test-password cisco – The password used for test purposes.
- thread-pool-size 10 – Specifies the size of the thread pool for handling requests.
- max-proxy-queue-size 3 – Specifies the maximum size of the proxy queue.
- server-type - Specify as "online" for OCS server and "offline" for Passive-MZ server.
- radius properties grpc.executors – Configures properties related to gRPC executors.
- value 40 – Specifies the value for the gRPC executors property.

For more information on ULB, see the *Unified Load Balancer Configuration and Administration Guide*.

RADIUS Configuration

Click **RADIUS Configuration** in the right pane to add the configuration in the system.

Figure 1: RADIUS Configuration



The following parameters can be configured under RADIUS Configuration:

Table 1: RADIUS Configuration Parameters

Parameter	Description
Accounting Port	Port used for incoming radius accounting.
Authorization Port	Port used for incoming radius authorization.
Coa Port	Port used for Change of Authority between CPC and Radius Device.
Date Time Format	Time stamping format for radius transactions.
Location Db Host1	Mongo location for Primary Radius database.
Location Db Host2	Mongo location for Secondary Radius database.
Location Db Port	Port number for the Radius database.
Accounting Enabled	Enables CPC to receive incoming Radius Accounting. Default value is True (checked).

Parameter	Description
Authorization Enabled	Enables CPC to receive incoming Radius Authorization. Default value is True (checked).
Coa Enabled	Enables CPC to send and receive CoAs.
Log Access Requests	Log the radius accounting which is configured in `/etc/broadhop/logback.xml`. The typical default logging location is `/var/broadhop/radius/accounting/accounting.current`.
Log Accounting	Logs radius authorization requests, also configured in `/etc/broadhop/logback.xml`. The typical default logging location is `/var/broadhop/radius/access/rejects.current`.
Disable Location Db	Will not record WLC locations in the Radius mongo DB. Default value is False (unchecked).

For information on proxy settings, refer to RADIUS AAA Proxy Settings.

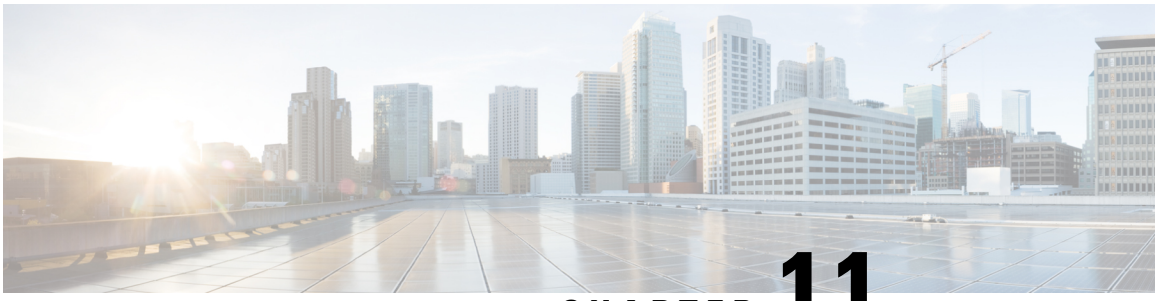
RADIUS AAA Proxy Settings

Click **RADIUS AAA Proxy Settings** to add the configuration in the system. These proxy settings are used for domain-based subscriber authorization.

Table 2: RADIUS AAA Proxy Settings

Parameter	Description
RADIUS Server	Server Identification which will be mapped between Proxy Settings and Domain/Service.
Accounting Port	AAA Server Accounting Port which will receive and process accounting requests.
Authorization Port	AAA Server Authorization Port which will receive and process authentication requests.
Primary IP Address	Primary AAA Server IP address.
Secondary IP Address	Secondary AAA Server IP address.
RADIUS NAS IP Address	NAS IP address which will be sent in the proxied requests.
RADIUS Auth Protocol	RADIUS authentication protocol used. Default: PAP
RADIUS Password	RADIUS authentication password.
Retries	Number of times the requests will be retried in a failure scenario.
Shared Secret	Shared Secret of the AAA Server.

Parameter	Description
Test User Id	RADIUS username used for testing between CPC and AAA Server.
Test Password	RADIUS password used for testing between CPC and AAA Server.
Thread Pool Size	Number of threads to handle proxying of requests.
Max Proxy Queue Size	Maximum number of requests that can be queued before being proxied.
Send Test Message	Select this option to send a test message to the AAA server when CPC comes up.



CHAPTER 11

Subscriber Migration

- Migration commands, on page 97
- SOAP Kafka Proxy configuration, on page 97

Migration commands

cpc-migration

Command Modes: Exec > Global Configuration

Syntax Description:

```
cpc-migration { enable { true | false } | external-ips <IP1> <IP2>
| replicas <1-5> | logger-port <port> | ip-hostnames <IP> hostname <name>
| properties <prop> value <val> }
```

`enable`: Enables or disables the migration process.

`external-ips`: Sets the external IP addresses for the SOAP Proxy.

`replicas` Sets the number of migration replicas (Range: 1-5).

`logger-port`: Sets the port number for debug logging.

`ip-hostnames`: Associates an IP address with a specific hostname.

`properties`: Configures migration-specific properties (e.g., `server.port`, `cps.url`, `cnaaa.url`, `enable.getsubscriber`).

SOAP Kafka Proxy configuration

This section describes the configuration parameters for the SOAP Kafka Proxy.

cpc-migration soap-kafka-proxy

Command Modes: Exec > Global Configuration

Syntax Description:

```
cpc-migration soap-kafka-proxy { enable { true | false } | port <port>
| external-ips [ <IP_Address> ] | affinity-label { key <key> | value <val> }
| producer properties <prop> value <val> | consumer properties <prop> value <val> |
```

```
 kafka { local-site-id <name> | remote-site-id <name> | external-ip <IP> <port> |
remote-site kafka-server <IP> <port> | failedapi-dlq { retentionbytes bytes | retentionms
ms }
| soapapi-details { retentionbytes bytes | retentionms ms } | consumer-heartbeat {
retentionbytes bytes
| retentionms ms } | soap-api-partition <value> } }
```

`enable`: Enables the SOAP Kafka Relay solution.

`port`: Sets the SOAP proxy port.

`affinity-label`: Configures pod affinity labels.

`producer/consumer properties`: Configures URL endpoints and cluster coordination settings.

`kafka`: Configures site identifiers, local/remote Kafka server connectivity, and topic-specific retention/partition settings.

Usage Guidelines Use these commands to configure the SOAP Kafka Relay solution for subscriber migration between CPS 7.5 and cnAAA.

`soap-kafka-proxy kafka failedapi-dlq`

Command Modes: Exec > Global Configuration

Syntax Description:

`soap-kafka-proxy kafka failedapi-dlcpc-migrationq retentionbytes` *`retentionbytes`* `retentionms` *`retentionms`*

`retentionbytes`: Specify the retention size in bytes. Default: 2147483648.

`retentionms`: Specify the retention time in milliseconds. Default: 2592000000.

Example: `soap-kafka-proxy kafka failedapi-dlq retentionbytes 2147483658 retentionms 2592000020`

Usage Guidelines Use this command to configure the retention policy for the `failedapi-dlq` topic.

`cpc-migration soap-kafka-proxy kafka soapapi-details`

Command Modes: Exec > Global Configuration

Syntax Description:

`cpc-migration soap-kafka-proxy kafka soapapi-details retentionms` *`retentionms`* `retentionbytes` *`retentionbytes`*

`retentionms`: Specify the retention time in milliseconds. Default: 259200000.

`retentionbytes`: Specify the retention size in bytes. Default: 7516192768.

Example: `cpc-migration soap-kafka-proxy kafka soapapi-details retentionms 259200020 retentionbytes 7516192788`

Usage Guidelines Use this command to configure the retention policy for the `soapapi-details` topic.

`cpc-migration soap-kafka-proxy kafka consumer-heartbeat`

Command Modes: Exec > Global Configuration

Syntax Description:

`cpc-migration soap-kafka-proxy kafka consumer-heartbeat retentionms` *`retentionms`* `retentionbytes` *`retentionbytes`*

`retentionms`: Specify the retention time in milliseconds. Default: 86400000.

`retentionbytes`: Specify the retention size in bytes. Default: 104857600.

Example: `cpc-migration soap-kafka-proxy kafka consumer-heartbeat retentionms 86400010 retentionbytes 104857610`

Usage Guidelines Use this command to configure the retention policy for the `consumer-heartbeat` topic.

`cpc-migration soap-kafka-proxy kafka soap-api-partition`

Command Modes: Exec > Global Configuration

Syntax Description:

`cpc-migration soap-kafka-proxy kafka soap-api-partition` *`soap-api-partition`*

`value`: Specify the number of partitions for SOAP API Kafka topics. Range: 1 to 5. Default: 1.

Example: `cpc-migration soap-kafka-proxy kafka soap-api-partition 1`

Usage Guidelines Use this command to configure the number of partitions for SOAP API Kafka topics.