



Cisco Ultra Cloud Core CPC AAA- CLI Reference, Release 2026.02

First Published: 2026-04-23

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About this Guide



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

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



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aaa Authentication

Configures the aaa-based user management parameters.

Command Modes

Exec

Syntax Description

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

old-password *old_password*

Specify the old password.

Must be a string.

new-password *new_password*

Specify the new password.

Must be a string.

confirm-password *new_password*

Confirm the new password.

Must be a string.

Usage Guidelines

Use this command to configure the aaa-based user management parameters.

cd

Changes the current working directory.

Command Modes Exec

Syntax Description `cd directory.ssh`

directory

Specify the directory name.

Must be a string.

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

cdl clear sessions 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 `cd1 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 <i>number_of_rows</i> 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 <i>number_of_columns</i> 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

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cluster

Configures the cluster information.

Command Modes

Exec > Global Configuration

Syntax Description

```
cluster { cluster-id cluster_id | system-id system_id }
```

cluster-id *cluster_id*

Specify the cluster ID.

Must be a string.

Default Value: "cluster-1".

system-id *system_id*

Specify the system ID.

Must be a string.

Default Value: "system-1".

Usage Guidelines Use this command to configure cluster information.

cps-license

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


```

jaegar agent *agent*

Specify the Jaegar agent's 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.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.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., <code>http://svn/repos//configuration</code>). |
| 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

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datastore external-endpoints

Configures the list of external datastore endpoints.

Command Modes

Exec > Global Configuration

Syntax Description

datastore external-endpoints *external_endpoint*

external-endpoints *external_endpoints*

Specify the external datastore endpoints.

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.

datastore primary-endpoint connection-settings keep-alive



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

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- [engine](#), on page 58
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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_properties | 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

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

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

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

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arg-type

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

Pattern:
`'*'`

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

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

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

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

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} '
' (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>
- \$5\$rounds=<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 '\$5\$rounds=<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>
- \$6\$rounds=<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 '\$6\$rounds=<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)

yang-identifier



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.



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](#)
- [Ops-Center configuration for enabling IPv6 in RADIUS Endpoint, on page 88](#)
- [Configure the RADIUS Endpoint in cnAAA using Ops-Center, on page 89](#)
- [Ops Center configuration to enable ULB on RADIUS Endpoint, on page 90](#)
- [RADIUS Configuration, on page 92](#)
- [RADIUS AAA Proxy Settings, on page 94](#)

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 40000
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

```

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

RADIUS Configuration

*Accounting Port: 1813

*Authorization Port: 1812

*Coa Port: 3799

*Date Time Format: yyyyMMddHHmmss

*Location Db Host1: sessionmgr01

Location Db Host2:

*Location Db Port: 27017

Accounting Enabled

Authorization Enabled

Coa Enabled

Log Access Requests

Log Accounting

Disable Location Db

Proxy Eap Server Settings

▼ Actions

Create Child:

[RADIUS AAA Proxy Settings](#)

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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 <code>/etc/broadhop/logback.xml</code> . The typical default logging location is <code>/var/broadhop/radius/accounting/accounting.current</code> . |
| Log Accounting | Logs radius authorization requests, also configured in <code>/etc/broadhop/logback.xml</code> . The typical default logging location is <code>/var/broadhop/radius/access/rejects.current</code> . |
| 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. |

