Cloud Native BNG Control Plane Command Reference Guide, Release 2022.04

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About this Guide

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This guide provides details about the CLI commands available for the Cloud Native Broadband Network Gateway (cnBNG) Control Plane (CP).

• Conventions Used, on page xi

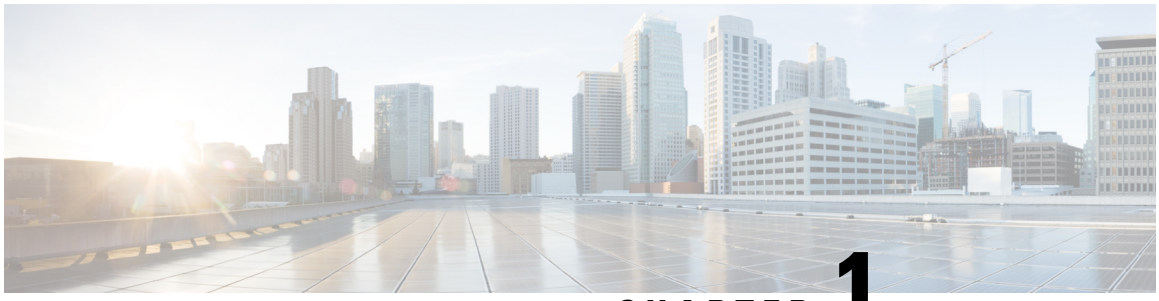
Conventions Used

The following tables describe the conventions used throughout this documentation.

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

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

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



CHAPTER 1

cnBNG CP Commands

This guide describes the CLI commands that are used to configure a control plane in cnBNG.

Some keywords and commands are common across multiple commands and configuration modes respectively. Use the information in the Command Modes section only as a reference to navigate to the command in the applicable configuration modes.

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aaa

Configures AAA-based user management parameters.

Command Modes

Exec

Syntax Description

aaa { authentication { users *list_of_local_users* **admin change-password old-password** *user_password* **new-password** *user_password* **confirm-password** *user_password* **} }**

users *list_of_local_users*

Specify the user name.

Must be a string.

old-password *user_password*

Specify the user's current password.

Must be a string.

new-password *user_password*

Specify the user's new password.

Must be a string.

confirm-password *user_password*

Reenter the user's new password.

Must be a string.

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

cd

Configures the change directory command.

Command Modes Exec

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

directory

Specify the directory path.

Must be an alphanumeric string.

Usage Guidelines Use this command to configure the change directory command.

cdl clear

Configures the Cisco Common Data Layer (CDL) parameters to delete the database sessions.

Command Modes Exec

Syntax Description **cdl clear sessions [db-name** *db_name* **| filter { condition { ends-with | match | starts-with } key** *key_value* **} | map-id** *map_id* **]**

db-name *db_name*

Specifies the database name to be queried for deleting the data.

Must be a string of 1 to 16 characters.

key *key_value*

Specifies the query value.

Must be a string of 0 to 512 characters.

map-id *map_id*

Specifies the map ID to delete the data for a map.

Must be an integer in the range of 0-1024.

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

Specify the query expression to filter the results of query.

Usage Guidelines Use this command to delete the CDL database sessions.

cdl show sessions

Configures the CDL parameters to display the session details.

Command Modes Exec

Syntax Description **cdl show sessions count { detailed { db-name** *db_name* **| filter { condition { ends-with | match | starts-with } | key** *key_value* **} | limit** *limit* **| map-id** *map_id* **} | summary { db-name** *db_name* **| filter { condition { ends-with | match | starts-with } | key** *key_value* **} | limit** *limit* **| map-id** *map_id* **}**

count

Display the session count information.

detailed

Display the session details with data.

summary

Display the session details without data.

db-name *db_name*

Specifies the database name to be queried for displaying the session details.

Must be a string of 1 to 16 characters.

key *key_value*

Specifies the query value.

Must be a string of 0 to 512 characters.

map-id *map_id*

Specifies the map ID to display the data for a map.

Must be an integer in the range of 0-1024.

limit *limit*

Specifies the maximum number of records to display.

Must be an integer in the range of 1 to 500 characters.

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

Specify the query expression to filter the results of query.

Usage Guidelines Use this command to display the session details.

cdl show status

Configures the CDL parameters to display the status of the database.

Command Modes Exec

Syntax Description **cdl status db-name** *db_name*

db-name *db_name*

Specifies the database name for displaying the corresponding status.

Must be a string of 1 to 16 characters.

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

clear l2tp-tunnel

Clears l2tp tunnel.

Command Modes Exec

Syntax Description **clear l2tp tunnel { upf** *upf_name* **} [tunnel-type** *tunnel_type* **| tunnel-id** *tunnel_id* **| force]**

force

Specify to force tunnel deletion, even if UP is down.

tunnel-id *tunnel_id*

Specify the tunnel ID.

Must be an integer in the range of 1-65535.

tunnel-type *tunnel_type*

Specify the tunnel type.

Must be one of the following:

- **lac**
- **lns**

upf *upf_name*

Specify name of the User Plane Function.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to clear l2tp tunnel.

clear subscriber

Clears BNG subscriber data.

Command Modes Exec

Syntax Description **clear subscriber** *type* **[upf** *upf_name* **| port-id** *upf_port_id* **| mac** *mac_address* **| sublabel** *subscriber_label* **| up-subs-id** *up_subscriber_id* **| ipv4-pool** *ipv4_pool_name* **| ipv6-addr-pool** *ipv6_address_pool_name* **| ipv6-pfx-pool** *ipv6_prefix_pool_name* **| ipv4-range** *ipv4_address_range* **| ipv6-addr-range** *ipv6_address_range* **| ipv6-pfx-range** *ipv6_prefix_range* **| ppp-type** *ppp_session_type* **| session-id** *session_id* **| tunnel-id** *tunnel_id* **srg-peer-id** *srg_peer_id* **]**

force

Specify to force session deletion, even if UP is down.

ipv4-pool *ipv4_pool_name*

Specify name of the IPv4 address pool.

Must be a string of 1-64 characters.

ipv4-range *ipv4_address_range*

Specify the IPv4 address range in the format "*poolName*/*start-ip*".

Must be a string of 1-64 characters.

ipv6-addr-pool *ipv6_address_pool_name*

Specify name of the IPv6 address pool.

Must be a string of 1-64 characters.

ipv6-addr-range *ipv6_address_range*

Specify the IPv6 address range in the format "*poolName*/*start-ip*".

Must be a string of 1-64 characters.

ipv6-pfx-pool *ipv6_prefix_pool_name*

Specify name of the IPv6 prefix pool.

Must be a string of 1-64 characters.

ipv6-pfx-range *ipv6_prefix_range*

Specify the IPv6 prefix range in the format "*poolName*/*start-pfx*".

Must be a string of 1-64 characters.

mac *mac_address*

Specify the MAC address in the format "aabb.ccdd.eeff".

Must be a string of 1-64 characters.

port-id *upf_port_id*

Specify port ID of the user plane function in the "*upf*/*port-id*" format.

Must be a string of 1-64 characters.

ppp-type *ppp_session_type*

Specify the PPP session type.

Must be one of the following:

- **lac**
- **pta**

session-id *session_id*

Specify the session ID information.

Must be a string of 1-64 characters.

sublabel *subscriber_label*

Specify the subscriber label.

Must be a string of 1-64 characters.

tunnel-id *tunnel_id*

Specify the tunnel ID information.

Must be a string of 1-64 characters.

upf *upf_name*

Specify name of the user plane function.

Must be a string of 1-64 characters.

srg-peer-id *srg_peer_id*

Specify the identity of peer user plane for the group.

type

Specify the type.

Must be one of the following:

- **dhcp**
- **lns**
- **pppoe**
- **sessmgr**

Usage Guidelines Use this command to clear BNG subscriber data.

clear subscriber

Clears subscriber data.

Command Modes Exec

Syntax Description **clear subscriber { all | gr-instance** *gr_instance* **| imei** *imei_id* **| namespace** *namespace* **| nf-service** *nf_service* **| supi** *supi_id* **|** *config_specific_options* **}**

all

Specify to remove all subscriber data.

gr-instance *gr_instance*

Specify the subscribers from the GR instance.

imei *imei_id*

Specify the International Mobile Equipment Identity.

Must be a string of 15-16 characters.

namespace *namespace*

NOTE: This keyword is deprecated, use nf-service instead. Specifies the product namespace under which to search.

Default Value: cisco-mobile-infra:none.

nf-service *nf_service*

Specify the network function service under which to search.

Default Value: cisco-mobile-infra:none.

supi *supi_id*

Specify to remove subscriber data associated with the SUPI ID.

Must be a string of 1-63 characters.

Usage Guidelines Use this command to clear subscriber data.

client http header

Configures HTTP header parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client http header user-agent** *user_agent_header*

user-agent *user_agent_header*

Specify the user agent header.

Must be one of the following:

- **app-name**
- **cluster-name**
- **disable**

Default Value: app-name.

Usage Guidelines Use this command to configure HTTP header parameters.

client http ping

Configures HTTP ping parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client http ping { [interval** *ping_interval* **] [timeout** *ping_timeout* **] }**

interval *ping_interval*

Specify, in milliseconds, the time interval between two HTTP pings.

Must be an integer in the range of 0-30000.

Default Value: 10000.

timeout *ping_timeout*

Specify, in milliseconds, the ping timeout duration to detect if remote host is down.

Must be an integer in the range of 0-15000.

Default Value: 5000.

Usage Guidelines Use this command to configure HTTP ping parameters.

client inbound interface

Configures inbound client interface parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client inbound interface** *interface_name*

interface *interface_name*

Specify name of the interface. Must be one of the following: bfd, bgp, coa-nas, geo-external, geo-internal, gtpu, n4.

Usage Guidelines Use this command to configure inbound client interface parameters. The CLI prompt changes to the Interface Configuration mode (config-interface-<interface_name>).

client inbound interface limit overload

Configures Overload configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client inbound limit overload reject-code** *response_code*

reject-code *response_code*

Specify the response code to be used when pending limit exceeds.

Must be an integer.

Usage Guidelines Use this command to configure Overload configuration parameters.

client inbound interface limit pending

Configures pending request limit parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **client inbound limit pending request** *max_pending_request_limit*

request *max_pending_request_limit*

Specify the maximum pending request limit to allow.

Must be an integer.

Default Value: 10240.

Usage Guidelines Use this command to configure the pending request limit parameter.

client inbound limit overload

Configures Overload configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client inbound limit overload reject-code** *response_code*

reject-code *response_code*

Specify the response code to be used when pending limit exceeds.

Must be an integer.

Usage Guidelines Use this command to configure Overload configuration parameters.

client inbound limit pending

Configures pending request limit parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **client inbound limit pending request** *max_pending_request_limit*

request *max_pending_request_limit*

Specify the maximum pending request limit to allow.

Must be an integer.

Default Value: 10240.

Usage Guidelines Use this command to configure the pending request limit parameter.

client outbound host ping

Configures outbound host ping parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **client outbound host ping { [backoff** *backoff_interval* **] [interval** *ping_interval* **] [timeout** *ping_timeout* **] }**

backoff *backoff_interval*

Specify, in milliseconds, the backoff time interval to wait when remote host is detected down before pinging again.

Must be an integer in the range of 0-3600000.

Default Value: 0.

interval *ping_interval*

Specify, in milliseconds, the time interval between two pings.

Must be an integer in the range of 0-30000.

Default Value: 0.

timeout *ping_timeout*

Specify the ping timeout duration, in milliseconds, to detect remote host down.

Must be an integer in the range of 0-15000.

Default Value: 0.

Usage Guidelines Use this command to configure outbound host ping parameter.

client outbound interface

Configures outbound client interface parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **client outbound interface** *interface_name*

interface *interface_name*

Specify the interface.

Usage Guidelines Use this command to configure outbound client interface parameters. The CLI prompt changes to the Interface Configuration mode (config-interface-<interface_name>).

client outbound interface host ping

Configures outbound host ping parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **client outbound host ping { [backoff** *backoff_interval* **] [interval** *ping_interval* **] [timeout** *ping_timeout* **] }**

backoff *backoff_interval*

Specify, in milliseconds, the backoff time interval to wait when remote host is detected down before pinging again.

Must be an integer in the range of 0-3600000.

Default Value: 0.

interval *ping_interval*

Specify, in milliseconds, the time interval between two pings.

Must be an integer in the range of 0-30000.

Default Value: 0.

timeout *ping_timeout*

Specify the ping timeout duration, in milliseconds, to detect remote host down.

Must be an integer in the range of 0-15000.

Default Value: 0.

Usage Guidelines Use this command to configure outbound host ping parameter.

client outbound interface limit consecutive failure

Configures consecutive failure configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description **consecutive failure count** *failure_limit_count* **codes** *failure_codes*

codes *failure_codes*

Specify the list of failure codes to be considered, such as timeout, 503, etc.

Must be a string.

You can configure a maximum of 10 elements with this keyword.

count *consecutive_failure_count*

Specify the consecutive failure limit count to detect remote host as down.

Must be an integer.

Default Value: 0.

Usage Guidelines Use this command to configure consecutive failure configuration parameters.

client outbound interface limit pending

Configures pending limit configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **client outbound limit pending response** *response_message_limit*

Command Modes Exec > Global Configuration (config) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **pending response** *response_message_limit*

response *response_message_limit*

Specify the pending response message limit to detect remote host as down.

Must be an integer.

Default Value: 1024.

Usage Guidelines Use this command to configure pending limit configuration.

client outbound limit consecutive failure

Configures consecutive failure configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description **consecutive failure count** *failure_limit_count* **codes** *failure_codes*

codes *failure_codes*

Specify the list of failure codes to be considered, such as timeout, 503, etc.

Must be a string.

You can configure a maximum of 10 elements with this keyword.

count *consecutive_failure_count*

Specify the consecutive failure limit count to detect remote host as down.

Must be an integer.

Default Value: 0.

Usage Guidelines Use this command to configure consecutive failure configuration parameters.

client outbound limit pending

Configures pending limit configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **client outbound limit pending response** *response_message_limit*

Command Modes Exec > Global Configuration (config) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **pending response** *response_message_limit*

response *response_message_limit*

Specify the pending response message limit to detect remote host as down.

Must be an integer.

Default Value: 1024.

Usage Guidelines Use this command to configure pending limit configuration.

commit

Configures the commit parameters.

Command Modes Exec

Syntax Description **commit [abort { persist-id** *persist_id* **} | confirm { persist-id** *persist_id* **} | persist-id** *persist_id* **]**

abort persist-id *persist_id*

Specify to abort commit. Specify the persistence ID for the commit operation.

Must be an integer.

confirm persist-id *persist_id*

Specify to confirm commit. Specify the persistence ID for the commit operation.

Must be an integer.

persist-id *persist_id*

Specify the persistence ID for the commit operation.

Must be an integer.

Usage Guidelines Use this command to configure the commit parameters.

compare

Compares the running configuration to another configuration or a file.

Command Modes Exec

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

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

Specify the file name or the directory path of the file to be compared.

Must be a string.

configuration

Specify the desired configuration to be compared against.

Must be a string.

Usage Guidelines Use this command to compare the files.

config

Manipulates the software configuration information.

Command Modes Exec

Syntax Description **`config [ exclusive | no-confirm | shared | terminal ]`**

exclusive

Specify to enter the exclusive configuration mode.

no-confirm

Specify to apply the command without asking for confirmation.

shared

Specify to enter the shared configuration mode.

terminal

Specify to enter the terminal configuration mode.

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

datastore dbs

Configures DBS parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **`datastore dbs`** *`dbs_name`* **`endpoints`** *`endpoint_name`* **`port`** *`port_number`*

dbs *dbs_name*

Specify name of the DBS.

Must be a string.

Usage Guidelines Use this command to configure the DBS parameters. The CLI prompt changes to the DBS Configuration mode (config-dbs-<dbs_name>).

datastore dbs endpoints

Configures endpoint parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **datastore session-db endpoints** *host_name* **port** *port_number*

Command Modes Exec > Global Configuration (config) > DBS Configuration (config-dbs-*dbs_name*)

Syntax Description **endpoints** *endpoint_name* **port** *port_number*

endpoints *endpoint_name*

Specify name of the endpoint host.

Must be a string.

port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure endpoint parameters.

datastore notification-ep

Configures notification endpoint parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **datastore notification-ep { [host** *host_name* **] [port** *port_number* **] }**

host *host_name*

Specify name of the host.

Must be a string.

port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure notification endpoint parameters.

datastore session-db

Configures Session DB parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **datastore session-db endpoints** *endpoint_name* **port** *port_number*

Usage Guidelines Use this command to configure Session DB parameters.

datastore session-db endpoints

Configures endpoint parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **datastore session-db endpoints** *host_name* **port** *port_number*

Command Modes Exec > Global Configuration (config) > DBS Configuration (config-dbs-*dbs_name*)

Syntax Description **endpoints** *endpoint_name* **port** *port_number*

endpoints *endpoint_name*

Specify name of the endpoint host.

Must be a string.

port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure endpoint parameters.

deployment

Configures the product deployment parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **deployment { app-name** *application_name* **| cluster-name** *cluster_name* **| dc-name** *datacenter_name* **| logical-nf-instance-id** *logical_nf_instance_id* **| model** *deployment_model* **}**

app-name *application_name*

Specify name of the application.

Must be a string.

cluster-name *cluster_name*

Specify name of the cluster.

Must be a string.

dc-name *datacenter_name*

Specify name of the datacenter.

Must be a string.

logical-nf-instance-id *logical_nf_instance_id*

Specify the logical NF instance ID.

Must be an integer.

Default Value: 0.

model *deployment_model*

Specify the deployment model. Default: Large.

Must be one of the following:

- **small**

Usage Guidelines Use this command to configure product deployment parameters.

deployment resource

Configures the deployment CPU resource parameter.

Command Modes Exec > Global Configuration (config) > Deployment Configuration (config-deployment)

Syntax Description **resource cpu** *cpu_size*

cpu *cpu_size*

Specify the CPU size in millicores.

Must be an integer in the range of 2000-1000000.

Default Value: 18000.

Usage Guidelines Use this command to configure the deployment CPU resource parameter.

describe

Displays the command information.

Command Modes

Exec

Syntax Description

describe *command*

command

Specify the command name to display detailed information about the command.

The command must be one of the following:

- **aaa**
- **cd**
- **cdl**
- **commit**
- **compare**
- **config**
- **describe**
- **dump**
- **exit**
- **help**
- **history**
- **id**
- **idle-timeout**
- **ignore-leading-space**
- **job**
- **leaf-prompting**
- **license**
- **logout**
- **monitor**
- **no**
- **paginate**
- **quit**
- **rcm**

- **screen-length**
- **screen-width**
- **send**
- **show**
- **show-defaults**
- **smiuser**
- **system**
- **terminal**
- **timestamp**
- **who**

Usage Guidelines Use this command to display the command specific information.

dump transactionhistory

Creates dump of transaction history.

Command Modes Exec

Syntax Description `dump transactionhistory`

Usage Guidelines Use this command to create dump of transaction history.

edr

Configures EDR reporting parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description `edr { [ reporting reporting_status ] [ subscribers subscribers_edr_reporting ] }`

reporting *reporting_status*

Specify to enable or disable EDR reporting.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

Usage Guidelines Use this command to configure EDR parameters.

edr edrsubscribers

Configures subscriber EDR reporting.

Command Modes Exec > Global Configuration (config)

Syntax Description **edr subscribers** *subscribers_for_edr_reporting*

Syntax Description **edr reporting { enable | disable } subscribers** *subscribers_for_edr_reporting*

subscribers *subscribers_for_edr_reporting*

Specify the subscribers to enable EDR reporting. For example, imsi-123456789012345.

Must be a string.

You can configure a maximum of 10 elements with this keyword.

Usage Guidelines Use this command to configure subscriber EDR reporting.

edr file files

Configures EDR file parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **edr file { transaction | transaction-collision } [reporting** *reporting_status* **] [verbose** *verbosity_status* **]**

file { transaction | transaction-collision }

Specify name of the EDR file.

reporting *reporting_status*

Specify to enable or disable reporting of this file.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

verbose *verbosity_status*

Specify to enable or disable field description or long names in the file.

Must be one of the following:

- **disable**

- **enable**

Default Value: disable.

Usage Guidelines Use this command to configure EDR file parameters.

edr file files disable

Disables procedure IDs.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*)

Syntax Description **disable procedure-id** *procedure_ids*

procedure-id *procedure_ids*

Specify the procedure ID value(s)/name(s).

Must be a string.

Usage Guidelines Use this command to disable specific procedure IDs.

edr file files flush

Configures EDR file flush parameters.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*)

Syntax Description **flush interval** *file_flush_interval*

interval *file_flush_interval*

Specify, in milliseconds, the file flush interval.

Must be an integer.

Default Value: 1000.

Usage Guidelines Use this command to configure the EDR file flush parameters.

edr file files limit

Configures EDR file limit parameters.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*)

Syntax Description **limit { [count** *max_files_to_preserve* **] [size** *max_single_file_size* **] }**

count *max_files_to_preserve*

Specify the maximum number of files to be preserved.

Must be an integer.

Default Value: 10.

size *max_single_file_size*

Specify the maximum single file size limit in MB.

Must be an integer.

Default Value: 100.

Usage Guidelines Use this command to configure the EDR file limit parameters.

edr file files procedure-id disable-event-id

Disables transaction-level procedure ID configuration.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*)

Syntax Description **`procedure-id`** *`procedure_id`*

procedure *procedure_id*

Specify the procedure ID value/name.

Must be a string.

Usage Guidelines Use this command to disable transaction-level procedure ID configuration.

edr file files procedure-id disable-event-id disable-inner disable

Disables event IDs.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*) > Procedure ID Configuration (config-procedure-id-*procedure_id*)

Syntax Description **`disable event-id`** *`event_ids`*

event-id *event_ids*

Specify the event ID value(s)/name(s).

Must be a string.

Usage Guidelines Use this command to disable event IDs.

edr file files procedure-id disable-event-id disable-inner event-id disable-field-id

Disables procedure-level event ID configuration.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*) > Procedure ID Configuration (config-procedure-id-*procedure_id*)

Syntax Description **`event-id`** *`event_id`*

event *event_id*

Specify the event ID value/name.

Must be a string.

Usage Guidelines Use this command to disable procedure-level event ID configuration.

edr file files procedure-id disable-event-id disable-inner event-id disable-field-id disable

Disables field IDs.

Command Modes Exec > Global Configuration (config) > EDR File Configuration (config-file-*edr_file*) > Procedure ID Configuration (config-procedure-id-*procedure_id*)

Syntax Description **`disable field-id`** *`field_ids`*

field-id *field_ids*

Specify the field ID value(s)/name(s).

Must be a string.

Usage Guidelines Use this command to disable field IDs.

exit

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

Command Modes Exec

Syntax Description **`exit`**

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

geo maintenance

Configures Geo Admin Controller to enable or disable maintenance mode.

Command Modes Exec

Syntax Description **geo maintenance mode { false | true }**

mode { false | true }

Specify whether to enable or disable maintenance mode. To enable, set to true.

Must be one of the following:

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

Default Value: false.

Usage Guidelines Use this command to configure Geo Admin Controller to enable or disable maintenance mode.

geo reset-role

Configures Geo Admin Controller for reset role.

Command Modes Exec

Syntax Description **geo reset-role { [instance-id** *instance_id* **] [role** *new_role* **] }**

instance-id *instance_id*

Specify the instance ID for geo command.

role *new_role*

Specify the new role for the specified site.

Usage Guidelines Use this command to configure Geo Admin Controller for reset role.

geo switch-role

Configures Geo Admin Controller for trigger failover.

Command Modes Exec

Syntax Description **geo switch-role { [failback-interval** *failback_interval* **] [instance-id** *instance_id* **] [role** *new_role* **] }**

failback-interval *failback_interval*

Specify, in seconds, the interval between notify failover and actual failover.

Must be a string.

instance-id *instance_id*

Specify the instance ID for geo command.

role *new_role*

Specify the new role for the specified site.

Usage Guidelines Performs instance role manipulation. Use this command to configure Geo Admin Controller for trigger failover.

geomonitor podmonitor pods

Configures configuration of pods to be monitored.

Command Modes Exec > Global Configuration (config)

Syntax Description **geomonitor podmonitor pods** *pod_name* **[[failedReplicaPercent** *failed_replica_precentage* **] [retryCount** *retry_count* **] [retryFailOverInterval** *retry_interval* **] [retryInterval** *retry_interval* **]]**

failedReplicaPercent *failed_replica_precentage*

Specify the percentage of failed replica after which GR failover will get triggered.

Must be an integer in the range of 10-100.

pods *pod_name*

Specify the name of the pod to be monitored.

Must be a string.

retryCount *retry_count*

Specify the counter value to retry if pod failed to ping after which pod is marked as down.

Must be an integer in the range of 1-10.

retryFailOverInterval *retry_interval*

Specify, in milliseconds, the retry interval if pod ping fails.

Must be an integer in the range of 200-10000.

retryInterval *retry_interval*

Specify, in milliseconds, the retry interval if pod ping is successful.

Must be an integer in the range of 200-10000.

Usage Guidelines Use this command to configure configuration of pods to be monitored.

geomonitor remoteclustermonitor

Configures remote cluster monitoring parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **geomonitor remoteclustermonitor retryCount** *retry_count* **retryInterval** *retry_interval*

retryCount *retry_count*

Specify the retry count if remote cluster is not reachable. To disable, set to 0.

Must be an integer in the range of 0-10.

Default Value: 3.

retryInterval *retry_interval*

Specify, in milliseconds, the retry interval after which status of the remote site will be fetched.

Must be an integer in the range of 200-50000.

Default Value: 3000.

Usage Guidelines Use this command to configure remote cluster monitoring parameters.

geomonitor trafficMonitor

Configures traffic monitoring configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **geomonitor trafficMonitor thresholdCount** *threshold_count* **thresholdInterval** *threshold_interval*

thresholdCount *threshold_count*

Specify the number of calls received for standby instance. To disable, set to 0.

Must be an integer in the range of 0-10000.

Default Value: 0.

thresholdInterval *threshold_interval*

Specify, in milliseconds, the maximum duration window to hit the threshold count value.

Must be an integer in the range of 100-10000.

Default Value: 3000.

Usage Guidelines Use this command to configure traffic monitoring configuration.

geomonitor vipmonitor

Configures VIP monitoring configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **geomonitor vipmonitor instance-id** *instance_id*

Usage Guidelines Use this command to configure VIP monitoring configuration.

geomonitor vipmonitor instance

Configures VIP monitoring parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **vipmonitor instance instance-id** *instance_id*

instance-id *instance_id*

Specify the instance ID.

Must be an integer in the range of 1-8.

Usage Guidelines Configuration of VIPs to be monitored. Use this command to configure the instance ID.

geomonitor vipmonitor instance vips

Configures VIP interface monitoring parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **geomonitor vipmonitor instance** *instance_id* **vips** *vip_interface_name* **[retryCount** *retry_count* **| retryFailOverInterval** *retry_interval* **| retryInterval** *retry_interval* **| vipIp** *vip_ip* **| vipPort** *vip_port_number* **]**

retryCount *retry_count*

Specify the counter value to retry if VIP failed to ping after which VIP is marked as down.

Must be an integer in the range of 1-10.

retryFailOverInterval *retry_interval*

Specify, in milliseconds, the retry interval if VIP failed to ping.

Must be an integer in the range of 200-10000.

retryInterval ***retry_interval***

Specify, in milliseconds, the retry interval if VIP pinged successfully.

Must be an integer in the range of 200-10000.

vipIp ***vip_ip***

Specify the IPv4 address.

Must be a string.

vipPort ***vip_port_number***

Specify the diagnostic port number.

Must be an integer.

vip_interface_name

Specify name of the interface to monitor.

Must be a string.

Usage Guidelines Use this command to configure VIP monitoring configuration.

helm

Configures Helm configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **helm default-repository** *default_repository_name*

default-repository ***default_repository_name***

Specify the name of the default Helm repository.

Usage Guidelines Use this command to configure Helm configuration parameters.

helm charts

Displays Helm release details.

Command Modes Exec > Global Configuration (config)

Syntax Description **charts**

Usage Guidelines Use this command to view Helm release details.

helm repository

Configures Helm repository parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **helm repository** *helm_repo_name* **[[access-token** *access_token* **] [password** *helm_repo_password* **] [url** *helm_repo_url* **] [username** *helm_repo_username* **]]**

access-token *helm_repo_access_token*

Specify the access token for the Helm repository.

Must be a string.

helm repository *helm_repo_name*

Specify the name of the Helm repository.

Must be a string.

password *helm_repo_password*

Specify the password for the Helm repository.

url *helm_repo_url*

Specify the URL for the Helm repository.

Must be a string.

username *helm_repo_username*

Specify the username for the Helm repostiory.

Must be a string.

Usage Guidelines Use this command to configure the Helm repository parameters.

help

Displays help information for a specified command.

Command Modes Exec

Syntax Description **help** *command*

command

Specify the command name to display the corresponding help information.

The command must be one of the following:

- **aaa**
- **cd**
- **cdl**
- **commit**
- **compare**
- **config**
- **describe**
- **dump**
- **exit**
- **help**
- **history**
- **id**
- **idle-timeout**
- **ignore-leading-space**
- **job**
- **leaf-prompting**
- **license**
- **logout**
- **monitor**
- **no**
- **paginate**
- **quit**
- **rcm**
- **screen-length**
- **screen-width**
- **send**
- **show**
- **show-defaults**
- **smiuser**
- **system**
- **terminal**
- **timestamp**

- **who**

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 in the range of 0-1000.

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 the user ID information.

idle-timeout

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

Command Modes Exec

Syntax Description **idle-timeout** *duration*

duration

Specify the idle timeout duration in seconds.

Must be an integer in the range of 1-8192.

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

ignore-leading-space

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

Command Modes Exec

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

{ false | true }

Specify false to ignore the 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.

infra metrics experimental

Configures the experimental metrics version to be enabled.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra metrics experimental version** *experimental_metrics_version*

version *experimental_metrics_version*

Specify the experimental metrics version to be enabled.

Must be an integer in the range of 0-4.

Default Value: 0.

Usage Guidelines Use this command to configure the experimental metrics version to be enabled.

infra metrics verbose verboseLevels

Configures verbose configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra metrics verbose** *pod_type* **level** *verbose_level*

level *verbose_level*

Specify the default verbosity level.

Must be one of the following:

- **debug**

- **off**
- **production**
- **trace**

Default Value: trace.

pod_type

Specify the pod type.

Must be one of the following:

- **application**
- **load-balancer**
- **protocol**
- **service**

Usage Guidelines Use this command to configure verbose configuration parameters.

infra metrics verbose verboseLevels metrics metricsList

Configures metrics verbose level parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra metrics verbose** *pod_type* **metrics** *metrics_name* **granular-labels** *granular_labels* **level** *metrics_verbose_level*

granular-labels *granular_labels*

Specify the granular labels.

Must be a string.

level *metrics_verbose_level*

Specify the metrics verbosity level.

Must be one of the following:

- **debug**
- **off**
- **production**
- **trace**

Default Value: trace.

metrics *metrics_name*

Specify the name of the metrics.

Must be a string.

Usage Guidelines Use this command to configure metrics verbose level parameters.

infra transaction limit

Configures the maximum stage limit per transaction.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra transaction limit stage** *max_stage_limit*

stage *max_stage_limit*

Specify the maximum stage limit per transaction.

Must be an integer.

Default Value: 100.

Usage Guidelines Use this command to configure the maximum stage limit per transaction.

infra transaction limit consecutive same

Configures the maximum consecutive stage limit per transaction.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra transaction limit consecutive same stage** *max_consecutive_stage_limit*

stage *max_consecutive_stage_limit*

Specify the maximum consecutive stage limit per transaction.

Must be an integer.

Default Value: 10.

Usage Guidelines Use this command to configure the maximum consecutive stage limit per transaction.

infra transaction loop

Configures the transaction loop detection parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra transaction loop detection** *detection_status*

detection *detection_status*

Specify to enable or disable loop detection.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

Usage Guidelines Use this command to configure the transaction loop detection parameter.

infra transaction loop category

Configures the loop category.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra transaction loop category** *loop_category*

category *loop_category*

Specify the category.

Usage Guidelines Use this command to configure the loop category. The CLI prompt changes to the Loop Category Configuration mode(config-category-<category>).

infra transaction loop category threshold

Configures the loop detection interval parameter.

Command Modes Exec > Global Configuration (config) > Loop Category Configuration (config-category-*category*)

Syntax Description **threshold interval** *loop_detect_interval*

interval *loop_detect_interval*

Specify, in seconds, the loop detection interval.

Must be an integer.

Default Value: 5.

Usage Guidelines Use this command to configure the loop detection interval parameter.

infra transaction loop category threshold thresholds

Configures thresholds.

Command Modes Exec > Global Configuration (config) > Loop Category Configuration (config-category-*category*)

Syntax Description **thresholds** *threshold_level* **[[action** *threshold_action* **] [count** *max_transactions* **]]**

action *threshold_action*

Specify the action to take on threshold breach.

Must be one of the following:

- **kill-session**
- **log-event**
- **noop**

Default Value: noop.

count *max_transactions*

Specify the maximum number of transactions for the threshold interval.

Must be an integer.

Default Value: 100.

thresholds *threshold_level*

Specify the threshold level.

Must be one of the following:

- **high**
- **low**

Usage Guidelines Use this command to configure thresholds.

instance instance-id

Configures instance ID of GR instance.

Command Modes Exec > Global Configuration (config)

Syntax Description **instance instance-id** *instance_id*

instance-id *instance_id*

Specify the instance ID.

Usage Guidelines

GR instance-specific parameters. Use this command to configure the instance ID of GR instance. The CLI prompt changes to the Instance ID Configuration mode (config-instance-id-<instance_id>).

instance instance-id endpoint ep

Configures endpoint parameters.

Command Modes

Exec > Global Configuration (config) > Instance ID Configuration (config-instance-id-*instance_id*)

Syntax Description

endpoint *endpoint_type* **[[instancetype** *ep_local_interface_type* **] [loopbackEth** *loopbackEth* **] [loopbackPort** *loopbackPort* **] [nodes** *node_replicas_for_resiliency* **] [replicas** *replicas_per_node* **] [uri-scheme** *uri_scheme* **]]**

certificate-name *certificate_alias_name*

Specify the alias name for the certificate.

endpoint *endpoint_type*

Specify the endpoint type. Must be one of the following: bgpspeaker, dhcp, geo, l2tp-tunnel, n4-protocol, nodemgr, pppoe, radius, sbi, sm, udp-proxy.

instancetype *ep_local_interface_type*

Specify the endpoint local interface type.

Must be one of the following:

- **Dual**
- **IPv4**
- **IPv6**

Default Value: IPv4.

internal-vip

Specify the internal VIP.

Must be a string of 1-128 characters.

loopbackEth *loopbackEth*

Specify the endpoint local interface name or host IP.

Must be a string.

loopbackPort *loopbackPort*

Specify the endpoint local port.

Must be an integer.

nodes ***node_replicas_for_resiliency***

Specify the number of node replicas for resiliency.

Must be an integer.

Default Value: 1.

replicas ***replicas_per_node***

Specify the number of replicas per node.

Must be an integer.

Default Value: 1.

uri-scheme ***uri_scheme***

Specify the URI scheme.

Must be one of the following:

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

Default Value: http.

Usage Guidelines Use this command to configure endpoint parameters.

instance instance-id endpoint ep cpu

Configures K8 pod CPU configuration.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*)

Syntax Description **cpu { [max-process** *max_parallel_os_threads* **] [request** *cpu_resource_request* **] }**

max-process ***max_parallel_os_threads***

Specify the maximum parallel OS threads to use.

Must be an integer in the range of 1-32.

request ***cpu_resource_request***

Specify the CPU resource request in millicores.

Must be an integer in the range of 100-1000000.

Usage Guidelines Use this command to configure K8 pod CPU configuration.

instance instance-id endpoint ep interface

Configures endpoint interfaces.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service*)

Syntax Description **interface** *interface_type* **[[instancetype** *ep_local_interface_type* **] [loopbackEth** *loopback_eth* **] [loopbackPort** *loopback_port_number* **] [uri-scheme** *uri_scheme* **]]**

certificate-name *certificate_alias_name*

Specify the alias name for certificate.

instancetype *ep_local_interface_type*

Specify the endpoint local interface type.

Must be one of the following:

- **Dual**
- **IPv4**
- **IPv6**

Default Value: IPv4.

interface *interface_type*

Specify the interface type.

loopbackEth *loopback_eth*

Specify the Loopback Eth pod interface.

Must be a string.

loopbackPort *loopback_port_number*

Specify the loopback port number.

Must be an integer.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

- **http**

- **https**

Default Value: http.

Usage Guidelines Use this command to configure endpoint interfaces.

instance instance-id endpoint ep interface dispatcher

Configures dispatcher queue support for the interface.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description

dispatcher [[cache { false | true }] [capacity *queue_capacity* **] [count** *dispatcher_queue_count* **] [expiry** *cache_entry_expiry_duration* **] [flowctrl-group** *group_name* **{ capacity** *inbound_queue_size* **| outbound-capacity** *outbound_queue_size* **| outbound-rate-limit** *outbound_rate_limit* **| rate-limit** *inbound_rate_limit* **}] [nonresponsive** *cache_entry_expiry_duration* **] [outbound { false | true }] [rate-limit** *queue_rate_limit* **] [threshold** *outstanding_requests* **]**

cache { false | true }

Specify whether to disable or enable retransmission cache support. To enable, set to false.

Must be one of the following:

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

Default Value: false.

capacity *queue_capacity*

Specify the capacity of each queue.

Must be an integer.

Default Value: 5000.

count *dispatcher_queues_count*

Specify the count of dispatcher queues.

Must be an integer.

Default Value: 0.

expiry *expiry_duration*

Specify the responded cache entry expiry duration in milliseconds.

Must be an integer.

Default Value: 60000.

flowctrl-group *group_name* { capacity *inbound_queue_size* | outbound-capacity *outbound_queue_size* | outbound-rate-limit *outbound_rate_limit* | rate-limit *inbound_rate_limit* }

Specify the queue size and rate limit for the specified flow control group.

Note The flow control group name must be the same for N4 and GTPu interfaces for a given group.

- **capacity** *inbound_queue_size*: Specify the capacity for inbound queue.
- **outbound-capacity** *outbound_queue_size*: Specify the capacity for outbound queue.
- **outbound-rate-limit** *outbound_rate_limit*: Specify the rate limit for outbound queue.
- **rate-limit** *inbound_rate_limit*: Specify the rate limit for inbound queue.

nonresponsive *nonresponsive_duration*

Specify the not responded cache entry expiry duration in milliseconds.

Must be an integer.

Default Value: 30000.

outbound { false | true }

Specify whether to disable or enble queue support for outbound messages. To enable, set to false.

Must be one of the following:

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

Default Value: true.

rate-limit *rate_limit*

Specify the rate limit for each queue.

Must be an integer.

Default Value: 0.

threshold *outstanding_requests*

Specify the outstanding requests per queue cache.

Must be an integer.

Default Value: 30000.

Usage Guidelines Use this command to configure dispatcher queue support for the interface.

instance instance-id endpoint ep interface internal base-port

Configures base-port to start endpoint parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **`internal base-port start`** *`base_port_to_start_ep`*

start *base_port_to_start_ep*

Specify the base-port to start endpoint.

Must be an integer in the range of 1024-65535.

Usage Guidelines Use this command to configure the base-port to start endpoint parameter.

instance instance-id endpoint ep interface sla

Configures SLA parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **`sla { [ response`** *`response_time`* **`] [ procedure`** *`procedure_time`* **`] }`**

procedure *procedure_time*

Specify, in milliseconds, the procedure time.

Must be an integer in the range of 1000-120000.

response *response_time*

Specify, in milliseconds, the response time.

Must be an integer in the range of 1000-180000.

Usage Guidelines Use this command to configure SLA parameters.

instance instance-id endpoint ep interface vip

Configures Virtual IP parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **vip-ip** *vip_ip_address* **[[offline] [vip-interface** *interface_name* **] [vip-port** *vip_port_number* **]]**

offline

Specify to mark the vip-ip as offline.

vip-interface *interface_name*

Specify the interface name to advertise BGP router.

Must be a string.

vip-ip *vip_ip_address*

Specify the IP address of the host.

Must be a string.

vip-port *vip_port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure Virtual IP parameters.

instance instance-id endpoint ep interface vip6

Configures VIP IP6 parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **vip6 vip-ip6** *vip_ip6* **[[offline] [vip-ipv6-port** *port_number* **]]**

offline

Specify the VIP IP as offline.

vip-ip6 *vip_ip6*

Specify the host detail.

Must be a string.

vip-ipv6-port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure VIP IP6 parameters.

instance instance-id endpoint ep memory

Configures K8 pod memory configuration.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*)

Syntax Description **memory { [limit** *max_memory_resource* **] [request** *memory_resource_request* **] }**

limit *max_memory_resource*

Specify the maximum memory resource in use in megabytes.

Must be an integer in the range of 100-200000.

request *memory_resource_request*

Specify the memory resource request in megabytes.

Must be an integer in the range of 100-200000.

Usage Guidelines Use this command to configure K8 pod memory configuration.

instance instance-id endpoint ep retransmission

Configures PFCP retransmission configuration.

Command Modes Exec > Global Configuration

Syntax Description **retransmission max-retry** *max_retry* **timeout** *pfcp_retransmission_interval*

max-retry *max_retry*

Specify the maximum number of times PFCP request retry attempts. To disable retransmission, set to 0.

Must be an integer in the range of 0-1.

Default Value: 1.

timeout *pfcp_retransmission_interval*

Specify the PFCP retransmission interval in seconds.

Must be an integer in the range of 0-15.

Default Value: 15.

Usage Guidelines Use this command to configure PFCP retransmission configuration.

instance instance-id endpoint ep service

Configures VIP IPv6 parameters.

Command Modes Exec > Global Configuration (config) > Instance ID Configuration (config-instance-id-*instance_id*) > Endpoint *endpoint_type* Configuration (config-endpoint-*endpoint_type*)

Syntax Description **`service service-name`** *`service_name`*

service-name *service_name*

Specify the service name.

Must be a string in the pattern [A-Za-z0-9-].*[0-9].*.

Usage Guidelines Use this command to configure VIP IPv6 parameters.

instance instance-id endpoint ep service interface

Configures endpoint interfaces.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service*)

Syntax Description **`interface`** *`interface_type`* **`[ [ instancetype`** *`ep_local_interface_type`* **`] [ loopbackEth`** *`loopback_eth`* **`] [ loopbackPort`** *`loopback_port_number`* **`] [ uri-scheme`** *`uri_scheme`* **`] ]`**

certificate-name *certificate_alias_name*

Specify the alias name for certificate.

instancetype *ep_local_interface_type*

Specify the endpoint local interface type.

Must be one of the following:

- **Dual**
- **IPv4**
- **IPv6**

Default Value: IPv4.

interface *interface_type*

Specify the interface type.

loopbackEth *loopback_eth*

Specify the Loopback Eth pod interface.

Must be a string.

loopbackPort *loopback_port_number*

Specify the loopback port number.

Must be an integer.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

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

Default Value: http.

Usage Guidelines Use this command to configure endpoint interfaces.

instance instance-id endpoint ep service interface dispatcher

Configures dispatcher queue support for the interface.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **dispatcher [[cache { false | true }] [capacity** *queue_capacity* **] [count** *dispatcher_queue_count* **] [expiry** *cache_entry_expiry_duration* **] [flowctrl-group** *group_name* **{ capacity** *inbound_queue_size* **| outbound-capacity** *outbound_queue_size* **| outbound-rate-limit** *outbound_rate_limit* **| rate-limit** *inbound_rate_limit* **}] [nonresponsive** *cache_entry_expiry_duration* **] [outbound { false | true }] [rate-limit** *queue_rate_limit* **] [threshold** *outstanding_requests* **]**

cache { false | true }

Specify whether to disable or enable retransmission cache support. To enable, set to false.

Must be one of the following:

- **false**

- **true**

Default Value: false.

capacity *queue_capacity*

Specify the capacity of each queue.

Must be an integer.

Default Value: 5000.

count *dispatcher_queues_count*

Specify the count of dispatcher queues.

Must be an integer.

Default Value: 0.

expiry *expiry_duration*

Specify the responded cache entry expiry duration in milliseconds.

Must be an integer.

Default Value: 60000.

flowctrl-group *group_name* { capacity *inbound_queue_size* | outbound-capacity *outbound_queue_size* | outbound-rate-limit *outbound_rate_limit* | rate-limit *inbound_rate_limit* }

Specify the queue size and rate limit for the specified flow control group.

Note The flow control group name must be the same for N4 and GTPu interfaces for a given group.

- **capacity** *inbound_queue_size*: Specify the capacity for inbound queue.
- **outbound-capacity** *outbound_queue_size*: Specify the capacity for outbound queue.
- **outbound-rate-limit** *outbound_rate_limit*: Specify the rate limit for outbound queue.
- **rate-limit** *inbound_rate_limit*: Specify the rate limit for inbound queue.

nonresponsive *nonresponsive_duration*

Specify the not responded cache entry expiry duration in milliseconds.

Must be an integer.

Default Value: 30000.

outbound { false | true }

Specify whether to disable or enble queue support for outbound messages. To enable, set to false.

Must be one of the following:

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

Default Value: true.

rate-limit *rate_limit*

Specify the rate limit for each queue.

Must be an integer.

Default Value: 0.

threshold *outstanding_requests*

Specify the outstanding requests per queue cache.

Must be an integer.

Default Value: 30000.

Usage Guidelines Use this command to configure dispatcher queue support for the interface.

instance instance-id endpoint ep service interface internal base-port

Configures base-port to start endpoint parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Service Configuration (config-service-*service_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **`internal base-port start`** *`base_port_to_start_ep`*

start *base_port_to_start_ep*

Specify the base-port to start endpoint.

Must be an integer in the range of 1024-65535.

Usage Guidelines Use this command to configure the base-port to start endpoint parameter.

instance instance-id endpoint ep service interface overload-control client threshold critical

Configures the Overload Control Protection critical threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold critical** *critical_threshold_limit* **action** *critical_threshold_action*

Syntax Description **overload-control client threshold critical** *critical_threshold_limit* **action** *critical_threshold_action*

action *critical_threshold_action*

Specify the action to be taken if the critical threshold is hit.

critical *critical_threshold_limit*

Specify the critical threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control protection's critical threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control client threshold high

Configures the Overload Control Protection high threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold high** *high_threshold_limit* **action** *high_threshold_action*

Syntax Description **overload-control client threshold high** *high_threshold_limit* **action** *high_threshold_action*

action *high_threshold_action*

Specify the action to be taken when high threshold limit is hit.

high *high_threshold_limit*

Specify the high threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control Protection high threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control client threshold low

Configures the Overload Control Protection low threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold low** *low_threshold_limit* **action** *low_threshold_action*

Syntax Description **overload-control client threshold low** *low_threshold_limit* **action** *low_threshold_action*

action *low_threshold_action*

Specify the action to be taken when low threshold limit is hit.

low *low_threshold_limit*

Specify the low threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control Protection low threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control endpoint threshold critical

Configures the Overload Control Protection critical threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold critical** *critical_threshold_limit* **action** *critical_threshold_action*

Syntax Description **overload-control client threshold critical** *critical_threshold_limit* **action** *critical_threshold_action*

action *critical_threshold_action*

Specify the action to be taken if the critical threshold is hit.

critical *critical_threshold_limit*

Specify the critical threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control protection's critical threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control endpoint threshold high

Configures the Overload Control Protection high threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold high** *high_threshold_limit* **action** *high_threshold_action*

Syntax Description **overload-control client threshold high** *high_threshold_limit* **action** *high_threshold_action*

action *high_threshold_action*

Specify the action to be taken when high threshold limit is hit.

high *high_threshold_limit*

Specify the high threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control Protection high threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control endpoint threshold low

Configures the Overload Control Protection low threshold parameter.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **overload-control threshold low** *low_threshold_limit* **action** *low_threshold_action*

Syntax Description **overload-control client threshold low** *low_threshold_limit* **action** *low_threshold_action*

action *low_threshold_action*

Specify the action to be taken when low threshold limit is hit.

low *low_threshold_limit*

Specify the low threshold limit for outstanding requests.

Must be an integer in the range of 10-100000.

Usage Guidelines Use this command to configure the Overload Control Protection low threshold parameter. To configure threshold configuration per client, use the "overload-control client threshold ..." command.

instance instance-id endpoint ep service interface overload-control msg-type messageConfigs

Configures the message configuration parameters.

Command Modes Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **`overload-control msg-type`** *`message_type`* **`pending-request`** *`pending_requests`* **`queue-size`** *`queue_size`* **`rate-limit`** *`rate_limit`* **`reject-threshold`** *`reject_threshold`*

msg-type *message_type*

Specify the message type.

pending-request *pending_requests*

Specify the pending requests count in virtual queue.

Must be an integer.

queue-size *queue_size*

Specify the packet count or capacity of each virtual queue.

Must be an integer.

rate-limit *rate_limit*

Specify the rate limit for virtual queue.

Must be an integer.

reject-threshold *reject_threshold*

Specify the limit to reject incoming messages if this threshold percentage of pending requests are present.

Must be an integer.

Usage Guidelines Use this command to configure the message configuration parameters.

instance instance-id endpoint ep service interface sla

Configures SLA parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **sla { [response** *response_time* **] [procedure** *procedure_time* **] }**

procedure *procedure_time*

Specify, in milliseconds, the procedure time.

Must be an integer in the range of 1000-120000.

response *response_time*

Specify, in milliseconds, the response time.

Must be an integer in the range of 1000-180000.

Usage Guidelines Use this command to configure SLA parameters.

instance instance-id endpoint ep service interface vip

Configures Virtual IP parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **vip-ip** *vip_ip_address* **[[offline] [vip-interface** *interface_name* **] [vip-port** *vip_port_number* **]]**

offline

Specify to mark the vip-ip as offline.

vip-interface *interface_name*

Specify the interface name to advertise BGP router.

Must be a string.

vip-ip *vip_ip_address*

Specify the IP address of the host.

Must be a string.

vip-port *vip_port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure Virtual IP parameters.

instance instance-id endpoint ep service interface vip6

Configures VIP IP6 parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_name*) > Interface Configuration (config-interface-*interface_name*)

Syntax Description **vip6 vip-ip6** *vip_ip6* **[[offline] [vip-ipv6-port** *port_number* **]]**

offline

Specify the VIP IP as offline.

vip-ip6 *vip_ip6*

Specify the host detail.

Must be a string.

vip-ipv6-port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure VIP IP6 parameters.

instance instance-id endpoint ep system-health-level crash

Configures system health crash parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_type*)

Syntax Description **system-health-level crash { [cpu-percent** *cpu_percentage* **] [memory-in-mbs** *memory* **] [num-of-goroutine** *goroutine_per_core* **] }**

cpu-percent *cpu_percentage*

Specify the CPU percentage.

Must be an integer.

Default Value: 80.

memory-in-mbs *memory*

Specify the memory in MB.

Must be an integer.

Default Value: 2048.

num-of-goroutine *goroutine_per_core*

Specify the number of goroutine per core.

Must be an integer.

Default Value: 45000.

Usage Guidelines Use this command to configure system health crash parameters.

instance instance-id endpoint ep system-health-level critical

Configures system health critical parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_type*)

Syntax Description **critical { [cpu-percent** *cpu_percent* **] [memory-in-mbs** *memory* **] [num-of-goroutine** *number_of_goroutine* **] }**

cpu-percent *cpu_percentage*

Specify the CPU percentage.

Must be an integer.

Default Value: 60.

memory-in-mbs *memory*

Specify the memory in MB.

Must be an integer.

Default Value: 1024.

num-of-goroutine *number_of_goroutine*

Specify the number of goroutine per core.

Must be an integer.

Default Value: 35000.

Usage Guidelines Use this command to configure system health critical parameters.

instance instance-id endpoint ep system-health-level warn

Configures system health warn parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_type*)

Syntax Description **system-health-level warn { [cpu-percent** *cpu_percentage* **] [memory-in-mbs** *memory* **] [num-of-goroutine** *number_of_goroutine* **] }**

cpu-percent *cpu_percentage*

Specify the CPU percentage.

Must be an integer.

Default Value: 50.

memory-in-mbs *memory*

Specify the memory in MBs.

Must be an integer.

Default Value: 512.

num-of-goroutine *goroutine_per_core*

Specify the number of goroutine per core.

Must be an integer.

Default Value: 25000.

Usage Guidelines Use this command to configure system health warn parameters.

instance instance-id endpoint ep vip

Configures VIP parameters.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Endpoint Configuration (config-endpoint-*endpoint_type*)

Syntax Description **vip-ip** *vip_ipv4_address* **[[offline] [vip-interface** *vip_interface_name* **] [vip-port** *port_number* **]]**

offline

Specify the VIP-IP as offline.

vip-interface *vip_interface_name*

Specify the interface name to advertise BGP router.

Must be a string.

vip-ip *vip_ipv4_address*

Specify the VIP IPv4 address.

Must be a string.

vip-port *port_number*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure VIP parameters.

instance instance-id endpoint ep vip6

Configures VIP IPv6 parameters.

Command Modes Exec > Global Configuration (config) > Instance ID Configuration (config-instance-id-*instance_id*) > Endpoint *endpoint_type* Configuration (config-endpoint-*endpoint_type*)

Syntax Description **vip-ipv6** *vip_ipv6_detail* **[[offline] [vip-ipv6-port** *vip_ipv6_port_number* **]]**

offline

Specify the VIP-IP as offline.

vip-ipv6-port *vip_ipv6_port_number*

Specify the port number.

Must be an integer.

vip-ipv6 *vip_ipv6_detail*

Specify the IPv6 detail.

Must be a string.

Usage Guidelines Use this command to configure VIP IPv6 parameters.

instances instance

Configures instance configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **instances instance** *instance_id* **[[cluster-id** *cluster_id* **] [system-id** *system_id* **] [slice-name** *slice_name* **]]**

cluster-id *cluster_id*

Specify the instance cluster ID.

Must be a string.

instance-id *instance_id*

Specify the instance ID.

Must be an integer in the range of 1-8.

slice-name *slice_name*

Specify the CDL slice name associated with instance ID.

Must be a string.

system-id *system_id*

Specify the instance system ID.

Must be a string.

Usage Guidelines Use this command to configure instance configuration parameters.

ipam instance

Configures IPAM instance parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **ipam instance** *instance_id*

instance *instance_id*

Specify the instance ID.

Must be an integer in the range of 1-8.

Usage Guidelines Use this command to configure IPAM instance parameters. The CLI prompt changes to the Instance Configuration mode (config-instance-<instance_id>).

ipam instance address-pool

Configures IPAM address pools.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-*instance_id*)

Syntax Description **address-pool** *pool_name* **[address-quarantine-qsize** *address_quarantine_queue_size* **| address-quarantine-timer** *address_quarantine_timer_interval* **| offline | static | vrf-name** *vrf_name* **]**

address-pool *pool_name*

Specify name of the address pool.

Must be a string of 1-128 characters in the ipam-str pattern. For information on the ipam-str pattern, see the *Input Pattern Types* chapter.

address-quarantine-qsize *address_quarantine_queue_size*

Specify the maximum number of IPs to be held in quarantine queue per-dp, per-af, per-instance. By default, it is set to 0 (no limit).

Must be an integer.

address-quarantine-timer *address_quarantine_timer_interval*

Specify the address quarantine timer interval in seconds.

Must be an integer in the range of 4-3600.

Default Value: 4.

offline

Specify the pool as an offline pool.

vrf-name *vrf_name*

Specify name of the VRF.

Must be a string of 1-128 characters in the ipam-str pattern. For information on the ipam-str pattern, see the *Input Pattern Types* chapter.

Usage Guidelines

Use this command to configure IPAM address pools. The CLI prompt changes to the Address Pool Configuration mode (config-address-pool-<address_pool_name>).

ipam instance address-pool ipv4 address-range

Configures IPv4 address ranges.

Command Modes

Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Syntax Description

`address-range` *`start_ipv4_address end_ipv4_address`* **`[ offline ] [ default-gateway`** *`ip_address`* **`]`**

default-gateway *ip_address*

Specify the default gateway IP address for static pool.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

offline

Specify the IPv4 address range as offline.

end_ipv4_address

Specify the end address of the IPv4 address range.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

start_ipv4_address

Specify the start address of the IPv4 address range.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPv4 address ranges.

ipam instance address-pool ipv4 prefix-range

Configures IPv4 prefix range.

Command Modes Exec > Global Configuration (config) > Instance Configuration (config-instance-id-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*)

Syntax Description **ipv4 prefix-range range** *prefix_value prefix_length* **[offline] [default-gateway** *ip_address* **]**

default-gateway *ip_address*

Specify the default gateway IP address for static pool.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

length *prefix_length*

Specify the IPv4 prefix length.

Must be an integer in the range of 1-31.

offline

Specify the IPv4 prefix range as offline.

prefix_value

Specify the IPv4 prefix.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPv4 prefix range.

ipam instance address-pool ipv4 split-size

Configures chunk split size parameters.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **`split-size [ [ no-split ] [ per-cache`** *`number_of_addresses`* **`] [ per-dp`** *`number_of_addresses`* **`] ]`**

no-split

Specify not to split the address range into smaller chunks.

per-cache *number_of_addresses*

Specify the number of addresses per chunk for IPAM cache allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

per-dp *number_of_addresses*

Specify the number of addresses per chunk for data-plane allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

Usage Guidelines Use this command to configure chunk split size parameters. The CLI prompt changes to the Split Size Configuration mode (config-split-size).

ipam instance address-pool ipv4 threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **threshold upper-threshold** *upper_threshold*

upper-threshold *upper_threshold*

Specify the upper threshold value in percentage.

Must be an integer in the range of 1-100.

Usage Guidelines Use this command to configure pool thresholds.

ipam instance address-pool ipv6 address-ranges address-range

Configures IPv6 address ranges.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Syntax Description **address-range** *start_ipv6_address end_ipv6_address* **[offline]**

offline

Specify the IPv6 address range as offline.

end_ipv6_address

Specify the end address of the IPv6 address range.

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

start_ipv6_address

Specify the start address of the IPv6 address range.

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPv6 address ranges.

ipam instance address-pool ipv6 address-ranges prefix-range

Configures IPv6 prefix range.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Syntax Description **prefix-range range** *prefix_value prefix_length* **[offline]**

length *prefix_length*

Specify the IPv6 prefix length.

Must be an integer in the range of 96-127.

prefix_value

Specify the IPv6 prefix.

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPv6 prefix range.

ipam instance address-pool ipv6 address-ranges split-size

Configures chunk split size parameters.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **split-size [[no-split] [per-cache** *number_of_addresses* **] [per-dp** *number_of_addresses* **]]**

no-split

Specify not to split the address range into smaller chunks.

per-cache *number_of_addresses*

Specify the number of addresses per chunk for IPAM cache allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

per-dp *number_of_addresses*

Specify the number of addresses per chunk for data-plane allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

Usage Guidelines Use this command to configure chunk split size parameters. The CLI prompt changes to the Split Size Configuration mode (config-split-size).

ipam instance address-pool ipv6 address-ranges threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **`threshold upper-threshold`** *`upper_threshold`*

upper-threshold *upper_threshold*

Specify the upper threshold value in percentage.

Must be an integer in the range of 1-100.

Usage Guidelines Use this command to configure pool thresholds.

ipam instance address-pool ipv6 prefix-ranges prefix-range

Configures IPv6 prefix ranges.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **`prefix-range`** *`prefix_value`* **`prefix-length`** *`prefix_length`* **`[ offline ]`**

offline

Specify the IPv6 prefix range as offline.

prefix-length *prefix_length*

Specify the prefix length.

Must be an integer in the range of 1-63.

prefix-range *prefix_value*

Specify the IPv6 prefix range.

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPv6 prefix ranges.

ipam instance address-pool ipv6 prefix-ranges split-size

Configures chunk split size parameters.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **split-size [[no-split] [per-cache** *number_of_addresses* **] [per-dp** *number_of_addresses* **]]**

no-split

Specify not to split the address range into smaller chunks.

per-cache *number_of_addresses*

Specify the number of addresses per chunk for IPAM cache allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

per-dp *number_of_addresses*

Specify the number of addresses per chunk for data-plane allocation. Specify in power of 2.

Must be an integer in the range of 2-262144.

Usage Guidelines Use this command to configure chunk split size parameters. The CLI prompt changes to the Split Size Configuration mode (config-split-size).

ipam instance address-pool ipv6 prefix-ranges threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Address Ranges Configuration (config-address-ranges)

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*) > IPv6 Configuration (config-ipv6) > Prefix Ranges Configuration (config-prefix-ranges)

Syntax Description **`threshold upper-threshold`** *`upper_threshold`*

upper-threshold *upper_threshold*

Specify the upper threshold value in percentage.

Must be an integer in the range of 1-100.

Usage Guidelines Use this command to configure pool thresholds.

ipam instance address-pool static

Configures IPAM static pool parameters.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*) > Address Pool Configuration (config-address-pool-*address_pool_name*)

Syntax Description **`static enable user-plane`** *`user_plane`*

enable

Specify to set pool as static.

user-plane *user_plane*

Specify to associate user plane for this static pool.

Must be a string of 1-128 characters in the ipam-str pattern. For information on the ipam-str pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure IPAM static pool parameters.

ipam instance min-dp-addr-size

Configures the minimum number of addresses to reserve per UPF, per NM, per pool/tag.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*)

Syntax Description

min-dp-addr-size [[ipv4-addr *reserve_min_ipv4_address* **] | [ipv6-addr** *reserve_min_ipv6_address* **] | [ipv6-prefix** *reserve_min_ipv6_prefix* **]]**

ipv4-addr *reserve_min_ipv4_address*

Specify the minimum number of IPv4 addresses to reserve.

Must be an integer in the range of 16-262144.

ipv6-addr *reserve_min_ipv6_address*

Specify the minimum number of IPv6 addresses to reserve.

Must be an integer in the range of 32-262144.

ipv6-prefix *reserve_min_ipv6_prefix*

Specify the minimum number of IPv6 prefix to reserve.

Must be an integer in the range of 32-262144.

Usage Guidelines

Use this command to configure the minimum number of addresses to reserve per UPF, per NM, per pool/tag.

ipam instance source

Configures pool-datastore source selection.

Command Modes

Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*)

Syntax Description

source local

local

Specify to use local address pool datastore.

Usage Guidelines

Use this command to configure pool-datastore source selection.";

ipam instance source external ipam

Configures external IPAM server for pool information.

Command Modes

Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*)

Syntax Description

source external ipam [host *ip_address* **| port** *port_number* **| vendor** *vendor_id* **]**

host *ip_address*

Specify the IP address of the IPAM server.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

-Or-

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

port *port_number*

Specify the port number of the IPAM server.

Must be an integer in the range of 1-65535.

vendor *vendor_id*

Specify the IPAM server's vendor ID. Default: cisco.

Must be one of the following:

- **cisco**

Usage Guidelines Use this command to configure external IPAM server for pool information.

ipam instance threshold

Configures global upper thresholds.

Command Modes Exec > Global Configuration (config) > IPAM Configuration (config-ipam) > Instance Configuration (config-instance-*instance_id*)

Syntax Description **threshold [[ipv4-addr** *ipv4_address_threshold* **] [ipv6-addr** *ipv6_address_threshold* **] [ipv6-prefix** *ipv6_prefix_threshold* **]]**

ipv4-addr *ipv4_address_threshold*

Specify the IPv4 address threshold in percentage.

Must be an integer in the range of 1-100.

ipv6-addr *ipv6_address_threshold*

Specify the IPv6 address threshold in percentage.

Must be an integer in the range of 1-100.

ipv6-prefix *ipv6_prefix_threshold*

Specify the IPv6 prefix threshold in percentage.

Must be an integer in the range of 1-100.

Usage Guidelines Use this command to configure global upper thresholds.

ipam show dp

Displays IPAM data-plane allocations.

Command Modes Exec

Syntax Description **show ipam dp [dp-name** *dataplane_name* **]**

dp-name *dataplane_name*

Specify name of the dataplane.

Must be a string.

Usage Guidelines Use this command to view IPAM data-plane allocations.

ipam show dp-tag

Displays data-plane tag-related allocations.

Command Modes Exec

Syntax Description **show ipam dp-tag** *dp_tag*

dp-tag *dp_tag*

Specify the dataplane name with tag.

Must be a string.

Usage Guidelines Use this command to view data-plane tag-related allocations. Tag represents DNN or PoolName based on NF.

ipam show ipam pool

Displays pool allocation information.

Command Modes Exec

Syntax Description **show ipam pool** *pool_name*

pool-name *pool_name*

Specify name of the pool.

Must be a string.

Usage Guidelines Use this command to view pool allocation information.

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 for suspending the corresponding job.

Must be an integer.

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

k8 bng

Configures Tracing configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **k8 bng [[coverage-build { false | true }] [datastore-endpoint** *datastore_endpoint* **] [etcd-endpoint** *etcd_endpoint* **]]**

coverage-build { false | true }

Specify whether to disable or enable coveage build.

Must be one of the following:

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

Default Value: false.

datastore-endpoint *datastore_endpoint*

Specify the Datastore Endpoint configuration. For example, *hostname*:*port*.

Must be a string of 1-128 characters.

Default Value: datastore-ep-session:8882.

etcd-endpoint *etcd_endpoint*

Specify the Etcd Endpoint configuration. For example, *hostname*:*port*.

Must be a string of 1-128 characters.

Default Value: etcd:2379.

Usage Guidelines Use this command to configure Tracing configuration parameters. The CLI prompt changes to the BNG Configuration mode (config-bng).

k8 bng tracing

Configures Tracing configuration parameters.

Command Modes Exec > Global Configuration (config) > BNG Configuration (config-bng)

Syntax Description

```
tracing [ [ append-messages { false | true } ] [ enable ] [
enable-trace-percent tracing_percentage ] [ endpoint tracing_endpoint ] ]
```

append-messages { false | true }

Specify whether to append tracing messages.

Must be one of the following:

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

Default Value: true.

enable-trace-percent *tracing_percentage*

Specify the tracing percentage.

Must be an integer in the range of 0-100.

Default Value: 100.

enable

Specify to enable tracing.

endpoint *tracing_endpoint*

Specify the Tracing Endpoint configuration. For example, *hostname*:*port*.

Must be a string of 1-128 characters.

Default Value: jaeger-collector:9411.

Usage Guidelines Use this command to configure Tracing configuration parameters. The CLI prompt changes to the Tracing Configuration mode (config-tracing).

k8 label pod-group-config

Configures K8 node affinity label pod group configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description

k8 label *pod_group* **key** *label_key* **value** *label_value*

key *label_key*

Specify the key for the label.

Must be a string.

value *label_value*

Specify the value for the label.

Must be a string.

pod_group

Specify the pod group for the VMs.

Must be one of the following:

- **cdl-layer**
- **oam-layer**
- **protocol-layer**
- **service-layer**

Usage Guidelines

Use this command to configure K8 node affinity label pod group configuration.

kubernetes

Configures Kubernetes parameters.

Command Modes

Exec > Global Configuration (config)

Syntax Description

k8s name *k8s_cluster_name* **[[image-pull-secrets** *image_pull_secrets* **] [ingress-host-name** *ingress_host_name* **] [namespace** *k8s_namespace* **] [nf-name** *nf_name* **] [registry** *image_registry* **] [single-node { false | true }] [use-volume-claims { false | true }]]**

image-pull-secrets *image_pull_secrets*

Specify the image pull secrets stored within K8s.

Must be a string.

ingress-host-name *ingress_host_name*

Specify the generic ingress host name.

Must be a string.

name *k8s_cluster_name*

Specify name of the K8s cluster.

Must be a string.

namespace *k8s_namespace*

Specify the K8s namespace for the network function.

Must be a string.

nf-name *nf_name*

Specify the NF deployed in this k8s namespace.

Must be a string.

registry *image_registry*

This keyword is deprecated.

Must be a string.

single-node { false | true }

Specify to enable or disable single node deployment.

Must be one of the following:

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

Default Value: false.

use-volume-claims { false | true }

Specify to enable or disable using volume claims when deploying.

Must be one of the following:

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

Default Value: false.

Usage Guidelines Use this command to configure Kubernetes parameters.

kubernetes nodes

Configures list of k8s nodes.

Command Modes Exec > Global Configuration (config)

Syntax Description **k8s nodes** *k8s_node_name* **[[node-type** *node_type* **] [worker-type** *worker_type* **]]**

node-type *node_type*

Specify the K8s node type.

Must be a string.

worker-type *worker_type*

Specify the k8s worker type.

Must be a string.

k8s_node_name

Specify name of the K8s node.

Must be a string.

Usage Guidelines Use this command to configure the list of k8s nodes.

leaf-prompting

Enables or disables automatic querying for leaf values.

Command Modes Exec

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

{ false | true }

Specify false to disable leaf prompting, and true to enable.

Must be either "false" or "true".

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

license smart deregister

Configures the license parameters for the VNF deregistration.

Command Modes Exec

Syntax Description **license smart deregister**

deregister

Specify to deregister the VNF for smart licensing.

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

license smart register

Configures the license parameters for the VNF registration.

Command Modes Exec

Syntax Description `license smart register force idtoken` *token_id*

register

Specify to register the VNF for Smart Licensing.

force

Specify to enable the force registration of the agent.

idtoken *token_id*

Specify the ID token to register the agent with.

Must be an integer.

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

license smart renew

Configures the license parameters for the VNF renewal.

Command Modes Exec

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

renew

Renew the smart agent IDs and authentication.

ID

Specify to renew the smart agent license registration information.

auth

Initiate the manual update of the license usage information with Cisco.

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

local-instance

Configures GR instance for current instance.

Command Modes Exec > Global Configuration

Syntax Description **local-instance instance** *gr_instance_id*

instance *gr_instance_id*

Specify the GR instance ID of current instance.

Usage Guidelines Use this command to configure GR instance for current instance.

logging async application enable

Enables async logging.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging async application enable buffer-size** *buffer_size*

Syntax Description **logging async monitor-subscriber enable buffer-size** *buffer_size*

Syntax Description **logging async tracing enable buffer-size** *buffer_size*

Syntax Description **logging async transaction enable buffer-size** *buffer_size*

buffer-size *buffer_size*

Specify the buffer size for async logging.

Must be an integer.

Usage Guidelines Use this command to enable async logging.

logging async monitor-subscriber enable

Enables async logging.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging async application enable buffer-size** *buffer_size*

Syntax Description **logging async monitor-subscriber enable buffer-size** *buffer_size*

Syntax Description **logging async tracing enable buffer-size** *buffer_size*

Syntax Description **logging async transaction enable buffer-size** *buffer_size*

buffer-size *buffer_size*

Specify the buffer size for async logging.

Must be an integer.

Usage Guidelines Use this command to enable async logging.

logging async tracing enable

Enables async logging.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging async application enable buffer-size** *buffer_size*

Syntax Description **logging async monitor-subscriber enable buffer-size** *buffer_size*

Syntax Description **logging async tracing enable buffer-size** *buffer_size*

Syntax Description **logging async transaction enable buffer-size** *buffer_size*

buffer-size *buffer_size*

Specify the buffer size for async logging.

Must be an integer.

Usage Guidelines Use this command to enable async logging.

logging async transaction enable

Enables async logging.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging async application enable buffer-size** *buffer_size*

Syntax Description **logging async monitor-subscriber enable buffer-size** *buffer_size*

Syntax Description **logging async tracing enable buffer-size** *buffer_size*

Syntax Description **logging async transaction enable buffer-size** *buffer_size*

buffer-size *buffer_size*

Specify the buffer size for async logging.

Must be an integer.

Usage Guidelines Use this command to enable async logging.

logging error

Configures error logging parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **`logging error stack`** *`status`*

stack *status*

Specify to enable or disable error stack.

Must be one of the following:

- **disable**
- **enable**

Default Value: enable.

Usage Guidelines Use this command to configure error logging parameters.

logging level

Configures the logging level.

Command Modes Exec > Global Configuration (config)

Syntax Description **`logging level`** *`logging_level`* **`{ [ application`** *`application_log_level`* **`] [ monitor-subscriber`** *`monitor_subscriber_log_level`* **`] [ tracing`** *`tracing_log_level`* **`] [ transaction`** *`transaction_log_level`* **`] }`**

application *application_log_level*

Specify the application logging level.

Must be one of the following:

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

monitor-subscriber *monitor_subscriber_log_level*

Specify the monitor subscriber logging level.

Must be one of the following:

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

tracing *tracing_log_level*

Specify the tracing logging level.

Must be one of the following:

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

transaction *transaction_log_level*

Specify the transaction logging level.

Must be one of the following:

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

Usage Guidelines Use this command to configure the logging level.

logging logger

Configures the log name.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging name** *log_name*

name *log_name*

Specify the log name in "module.component.interface" format.

Must be a string.

Usage Guidelines Use this command to configure the log name.

logging logger level

Configures the logging level.

Command Modes Exec > Global Configuration (config)

Syntax Description **logging level** *logging_level* **{ [application** *application_log_level* **] [monitor-subscriber** *monitor_subscriber_log_level* **] [tracing** *tracing_log_level* **] [transaction** *transaction_log_level* **] }**

application *application_log_level*

Specify the application logging level.

Must be one of the following:

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

monitor-subscriber *monitor_subscriber_log_level*

Specify the monitor subscriber logging level.

Must be one of the following:

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

tracing *tracing_log_level*

Specify the tracing logging level.

Must be one of the following:

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

transaction *transaction_log_level*

Specify the transaction logging level.

Must be one of the following:

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

Usage Guidelines Use this command to configure the logging level.

logging transaction

Configures the transaction logging parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description

```
logging transaction { duplicate | message | persist } { disable | enable
 }
```

duplicate { enable | disable }

Specify whether to enable or disable duplicate logs in transaction logging.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

max-file-size *max_file_size*

Specify the maximum transaction file size in MB.

Must be an integer in the range of 1-10000.

Default Value: 50.

max-rotation *max_rotations*

Specify the maximum number of file rotations.

Must be an integer in the range of 2-1000.

Default Value: 10.

message { enable | disable }

Specify whether to enable or disable messages in transaction logging.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

persist { enable | disable }

Specify whether to enable or disable file-based transaction logging.

Must be one of the following:

- **disable**
- **enable**

Default Value: disable.

Usage Guidelines Use this command to configure the transaction logging parameters.

logout

Logout a specific session or a specific user from all sessions.

Command Modes Exec

Syntax Description **`logout [ session`** *`session_id`* **`| user`** *`user_name`* **`]`**

session *session_id*

Specify the session ID from the possible completion options.

Must be a string.

user *user_name*

Specify the user name or the user process from the possible completion options.

Must be a string.

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

monitor protocol

Configures the SMF to monitor the protocol.

Command Modes Exec

Syntax Description **monitor protocol interface** *interface_name* **[capture-duration** *duration* **]**

interface *interface_name*

Specify the name of interface on which PCAP is captured.

Must be a string.

capture-duration *duration*

Specify the duration, in seconds, during which PCAP is captured. The default value is 300 seconds.

Must be an integer.

Usage Guidelines Use this command to monitor the protocol.

monitor subscriber

Configures the SMF to monitor the subscribers.

Command Modes Exec

Syntax Description **monitor subscriber supi** *supi* **[capture-duration** *duration* **] | subscriber-dump filename** *file_name* **| subscriber-list**

supi *supi*

Specify the subscriber identifier.

Must be a string.

capture-duration *duration*

Specify the duration, in seconds, during which PCAP is captured. The default value is 300 seconds.

Must be an integer.

filename *file_name*

Specify the path of the file name to be dumped.

Must be a string.

Usage Guidelines Use this command to monitor the subscribers.

nf-tls ca-certificates

Configure CA certificate parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **nf-tls ca-certificates** *cert_alias_name* **cert-data** *cert_data*

ca-certificates *cert_alias_name*

Specify the alias name of the certificate.

Must be a string.

cert-data *cert_data*

Specify the certificate data in PEM format.

Must be a string.

Usage Guidelines Configures TLS keystore configuration for interfaces. Use this command to configure CA certificate parameters.

nf-tls certificate-status

Displays certificate status information.

Command Modes Exec

Syntax Description **show nf-tls certificate-status**

Usage Guidelines Use this command to view certificate status information.

nf-tls certificates

Configures certificate parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **nf-tls certificates** *cert_alias_name* **cert-data** *cert_data* **private-key** *private_key*

cert-data *cert_data*

Specify the certificate data in PEM format.

Must be a string.

certificates *cert_alias_name*

Specify the alias name of the certificate.

Must be a string.

private-key *private_key*

Specify the certificate private key in PEM format.

Must be a string.

Usage Guidelines Configures TLS keystore configuration for interfaces. Use this command to configure certificate parameters.

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. For more details, see the history command.

paginate

Configures whether or not to paginate CLI command output.

Command Modes Exec

Syntax Description

```
paginate { false | true }
```

{ false | true }

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.

rcm switchover

Configures Redundancy and Configuration Manager (RCM) switchover operation.

Command Modes Exec

Syntax Description **`rcm switchover source`** *`ip_address`* **`destination`** *`ip_address`*

source *ip_address*

Specify the source IP address.

Must be an IP address.

destination *ip_address*

Specify the destination IP address.

Must be an IP address.

Usage Guidelines Use this command to configure RCM switchover operation.

reconcile ipam

Reconciles IPAM data with CDL records.

Command Modes Exec

Syntax Description **`reconcile ipam`**

Usage Guidelines Use this reconcile IPAM data with CDL records.

resource pod

Configures Pod resource parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **`resource pod podtype`** *`pod_type`*

gomaxproc *go_max_procedure_cores*

Specify the Go Lang max procedure cores.

Must be an integer in the range of 1-48.

podtype *pod_type*

Specify the pod type.

Usage Guidelines Use this command to configure Pod resource parameter. The CLI prompt changes to the Pod Resource Configuration mode (config-resource-<pod_type>).

resource pod cpu

Configures CPU resource request parameter.

Command Modes Exec > Global Configuration (config) > Pod Resource Configuration (config-resource-*pod_type*)

Syntax Description **cpu request** *cpu_resource_request* **limit** *cpu_resource_limit*

limit *cpu_resource_limit*

Specify the CPU resource limit in milicores.

Must be an integer in the range of 100-1000000.

request *cpu_resource_request*

Specify the CPU resource request in millicores.

Must be an integer in the range of 100-1000000.

Usage Guidelines Use this command to configure CPU resource request parameter.

resource pod labels

Configures K8 Node Affinity label configuration.

Command Modes Exec > Global Configuration (config) > Pod Resource Configuration (config-resource-*pod_type*)

Syntax Description **labels key** *label_key* **value** *label_value*

key *label_key*

Specify the key for the label.

Must be a string.

value *label_value*

Specify the value for the label.

Must be a string.

Usage Guidelines Use this command to configure K8 Node affinity label configuration.

resource pod memory

Configures memory resource requests and limit configuration.

Command Modes Exec > Global Configuration (config) > Pod Resource Configuration (config-resource-*pod_type*)

Syntax Description **memory request** *memory_resource_request* **limit** *memory_resource_limit*

limit *memory_resource_limit*

Specify the memory resource limit in megabytes.

Must be an integer in the range of 100-200000.

request *memory_resource_request*

Specify the memory resource request in megabytes.

Must be an integer in the range of 100-200000.

Usage Guidelines Use this command to configure memory resource requests and limit configuration.

router bfd instance instance-id

Configures Multi-Hop BFD configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **router bfd instance instance-id** *instance_id*

instance-id *instance_id*

Specify the instance ID.

Usage Guidelines Use this command to configure Multi-Hop BFD configuration. The CLI prompt changes to the Instance ID Configuration mode (config-instance-id-<instance_id>).

router bfd instance instance-id interface-list

Configures monitor interface list configuration.

Command Modes Exec > Global Configuration (config) > Instance ID Configuration (config-instance-id-*instance_id*)

Syntax Description **router monitor-interface interface-list interface** *interface_to_monitor*

gateway-ip *gateway_ip_address*

Specify IP address of the gateway.

Must be a string.

interface *interface_to_monitor*

Specify the interface to monitor.

Must be a string.

Usage Guidelines Use this command to configure monitor interface list configuration. The CLI prompt changes to the Instance ID Interface Configuration mode (config-instance-id-<interface_name>).

router bfd instance instance-id interface-list neighbors

Configures neighbor details.

Command Modes Exec > Global Configuration (config) > Instance ID Configuration (config-instance-id-*instance_id*) > Instance ID Interface Configuration (config-instance-id-*interface_name*)

Syntax Description **neighbor** *neighbor_ip_address*

neighbor *neighbor_ip_address*

Specify IP address of the neighbor.

Must be a string.

Usage Guidelines Use this command to configure neighbor details.

router bgplist

Configures BGP speaker configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **router bgp** *bgp* **[learnDefaultRoute { false | true } | loopbackBFDPort** *bfd_local_port_number* **| loopbackPort** *bgp_local_port_number* **]**

bgp *bgp*

Specify the BGP.

Must be an integer.

learnDefaultRoute { false | true }

Specify whether to enable or disable learning default route and adding it in kernel space.

Must be one of the following:

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

Default Value: false.

loopbackBFDPort *bfd_local_port_number*

Specify the BFD local port number.

Must be an integer.

Default Value: 3784.

loopbackPort *bgp_local_port_number*

Specify the BGP local port number.

Must be an integer.

Default Value: 179.

Usage Guidelines Use this command to configure the BGP speaker configuration.

router bgplist bfd

Configures BFD configuration.

Command Modes Exec > Global Configuration (config) > Router Configuration (config-router-*router*)

Syntax Description **bfd { interval** *bfd_interval* **| min_rx** *bfd_min_rx* **| multiplier** *bfd_interval_multiplier* **}**

interval *bfd_interval*

Specify, in microseconds, the BFD interval.

Must be an integer.

Default Value: 250000.

min_rx *bfd_min_rx*

Specify, in microseconds, the BFD minimum RX.

Must be an integer.

Default Value: 250000.

multiplier *bfd_interval_multiplier*

Specify the BFD interval multiplier.

Must be an integer.

Default Value: 3.

Usage Guidelines Use this command to configure the BFD configuration.

router bgplist interfaceList

Configures bonding interface configuration.

Command Modes Exec > Global Configuration (config) > Router Configuration (config-router-*router*)

Syntax Description **interface** *bgp_local_interface*

interface *bgp_local_interface*

Specify the BGP local interface.

Must be a string.

Usage Guidelines Use this command to configure the bonding interface configuration.

router bgplist interfaceList bondingInterfaces

Configures bonding interface configuration.

Command Modes Exec > Global Configuration (config) > Router Configuration (config-router-*router*) > Router Interface Configuration (config-router-*interface*)

Syntax Description **bondingInterface** *linked_bonding_interface*

bondingInterface *linked_bonding_interface*

Specify the linked bonding interface.

Must be a string.

Usage Guidelines Use this command to configure the bonding interface configuration.

router bgplist interfaceList neighbors

Configures neighbor parameters.

Command Modes Exec > Global Configuration (config) > Router Configuration (config-router-*router*) > Router Interface Configuration (config-router-*interface*)

Syntax Description **neighbor** *neighbor_ip_address* **[fail-over** *failover_type* **| remote-as** *remote_as_number* **]**

fail-over *failover_type*

Specify the failover type.

Must be one of the following:

- **bfd**

neighbor ***neighbor_ip_address***

Specify the IP address of the neighbor.

Must be a string.

remote-as ***remote_as_number***

Specify the Autonomous System (AS) number of the BGP neighbor.

Must be an integer.

Default Value: 65000.

Usage Guidelines Use this command to configure the neighbor parameters.

router bgplist policies

Configures policy parameters.

Command Modes Exec > Global Configuration (config) > Router Configuration (config-router-*router*)

Syntax Description

```
policy-name policy_name [ as-path-set as_path_set | gateWay gateway_address |
interface interface | ip-prefix ip_prefix | isStaticRoute { false | true } |
 mask-range mask_range | modifySourceIp { false | true } ]
```

as-path-set ***as_path_set***

Specify the Autonomous System (AS) path set.

Must be a string.

gateWay ***gateway_address***

Specify the gateway address.

Must be a string.

interface ***interface***

Specify the interface to set as source ip.

Must be a string.

ip-prefix ***ip_prefix***

Specify the IP prefix.

Must be a string.

isStaticRoute { false | true }

Specify whether to enable or disable adding static route into kernel space.

Must be one of the following:

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

Default Value: false.

mask-range *mask_range*

Specify the mask range.

Must be a string.

modifySourceIp { false | true }

Specify whether to enable or disable modifying source IP of incoming route.

Must be one of the following:

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

Default Value: false.

policy-name *policy_name*

Specify name of the policy.

Must be a string.

source-prefix *source_ip_prefix*

Specify the source IP prefix.

Must be a string.

Usage Guidelines Use this command to configure the policy parameters.

router monitor-interface interface-list

Configures monitor interface list configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **router monitor-interface interface-list interface** *interface_to_monitor* **linked-interface** *linked_interface_to_monitor*

interface *interface_to_monitor*

Specify the interface to monitor.

Must be a string.

linked-interface *linked_interface_to_monitor*

Specify the linked interface to monitor.

Must be a string.

Usage Guidelines Use this command to configure monitor interface list configuration.

screen-length

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

Command Modes Exec

Syntax Description **screen-length** *number_of_rows*

number_of_rows

Specify the number of rows that the terminal screen displays.

Must be an integer.

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

screen-width

Configures the number of columns that the terminal screen displays.

Command Modes Exec

Syntax Description **screen-width** *number_of_columns*

number_of_columns

Specify the number of columns that the terminal screen displays.

Must be an integer.

Usage Guidelines Use this command to set 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 completion 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 bfd-neigbor

Displays BFD status of neighbors.

Command Modes Exec

Syntax Description **show bfd-neigbor [ip** *ip_address* **]**

ip *ip_address*

Specify the IP address of the neighbor.

Must be a string.

Usage Guidelines Use this command to view BFD status of neighbors.

show bgp-global

Displays BGP global configuration.

Command Modes Exec

Syntax Description `show bgp-global`

Usage Guidelines Use this command to view BGP global configuration.

show bgp-kernel-route

Displays BGP kernel-configured routes.

Command Modes Exec

Syntax Description `show bgp-kernel-route [ application { false | true } ]`

application { false | true }

Specify whether to display application added routes.

Must be one of the following:

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

Default Value: false.

Usage Guidelines Use this command to view BGP kernel-configured routes.

show bgp-neighbors

Displays BGP neighbor's status.

Command Modes Exec

Syntax Description `show bgp-neighbors [ ip ip_address ]`

ip *ip_address*

Specify the IP address of the neighbor.

Must be a string.

Usage Guidelines Use this command to view BGP neighbor's status.

show bgp-route-summary

Displays BGP route summary.

Command Modes Exec

Syntax Description `show bgp-route-summary`

Usage Guidelines Use this command to view BGP route summary.

show bgp-routes

Displays BGP routes information.

Command Modes Exec

Syntax Description `show bgp-routes`

Usage Guidelines Use this command to view BGP routes information.

show config-error info

Displays configuration error information.

Command Modes Exec

Syntax Description `show config-error [ info ]`

Usage Guidelines Use this command to view configuration error information.

show diagnostics info

Displays diagnostics information.

Command Modes Exec

Syntax Description `show diagnostics [ info ]`

Usage Guidelines Use this command to view diagnostics information.

show edr

Displays EDR Transaction Procedure Event fields.

Command Modes Exec

Syntax Description `show edr { [ event` *`transaction_procedure_event`* `] [ transaction-procedure` *`transaction_procedure`* `] }`

event *transaction_procedure_event*

Specify the transaction procedure event name/id/all.

Must be a string.

transaction-procedure ***transaction_procedure***

Specify the transaction procedure's name, ID, or all.

Must be a string.

Usage Guidelines Use this command to view EDR Transaction Procedure Event fields.

show endpoint all

Displays endpoint status.

Command Modes Exec

Syntax Description `show endpoint [ all ]`

Usage Guidelines Use this command to view the status of endpoints.

show endpoint info

Displays endpoint information.

Command Modes Exec

Syntax Description `show endpoint info`

Usage Guidelines Use this command to view endpoint information.

show geo-maintenance-mode

Indicates whether maintenance mode is enabled or disabled.

Command Modes Exec

Syntax Description `show geo-maintenance-mode`

Usage Guidelines Use this command to view whether maintenance mode is enabled or disabled.

show georeplication

Displays ETCD/Cache checksum.

Command Modes Exec

Syntax Description **show georeplication checksum instance-id** *instance_id*

checksum

Specify checksum.

instance-id *instance_id*

Specify the instance ID for which checksum will be displayed.

Must be a string.

Usage Guidelines Use this command to view ETCD/Cache checksum.

show l2tp-tunnel

Show L2TP tunnel information.

Command Modes Exec

Syntax Description **show l2tp-tunnel [count** *tunnels_count* **| detail]**

count *tunnels_count*

Specify the number of tunnels.

detail

Specify to display detailed information.

Usage Guidelines Use this command to view L2TP tunnel information.

show l2tp-tunnel filter

Show L2TP tunnel information for additional filters.

Command Modes Exec

Syntax Description **show l2tp-tunnel filter { destination-addr** *destination_address* **| source-addr** *source_address* **| state** *state_info* **| tunnel-id** *l2tp_tunnel_id* **| tunnel-type** *tunnel_type* **| tunnelAssignmentID** *tunnel_assignment_id* **| upf** *upf_info* **}**

destination-addr *destination_address*

Specify the IP address of the tunnel destination.

Must be a string.

source-addr *source_address*

Specify the IP address of the tunnel source.

Must be a string.

state *state_info*

Specify the state information.

Must be one of the following:

- **complete**
- **incomplete**

tunnel-id *l2tp_tunnel_id*

Specify the L2TP tunnel ID.

Must be an integer in the range of 1-65535.

tunnel-type *tunnel_type*

Specify the tunnel type.

Must be one of the following:

- **lac**
- **lns**

tunnelAssignmentID *tunnel_assignment_id*

Specify assignment ID of the tunnel.

Must be a string.

upf *upf_info*

Specify the UPF.

Must be a string.

Usage Guidelines Use this command to view L2TP tunnel information for additional filters.

show local-interface-status

Displays status of local interface.

Command Modes Exec

Syntax Description **show local-interface-status interface** *local_interface_name*

interface *local_interface_name*

Specify name of the local interface.

Must be a string.

Usage Guidelines Use this command to view status of local interface .

show peers all

Displays peer information.

Command Modes Exec

Syntax Description `show peers [ all ]`

Usage Guidelines Use this command to view peer information.

show radius

Displays RADIUS client data.

Command Modes Exec

Syntax Description `show radius`

Usage Guidelines Use this command to view RADIUS client data.

show radius acct-server

Displays RADIUS accounting server data.

Command Modes Exec

Syntax Description `show radius acct-server [ ip_port ]`

ip_port

Specify the ip_address:port_number of the RADIUS server.

Must be a string.

Usage Guidelines Use this command to view RADIUS accounting server data.

show radius auth-server

Displays RADIUS authentication server data.

Command Modes Exec

Syntax Description `show radius auth-server [ ip_port ]`

ip_port

Specify the ip_address:port_number of the RADIUS server.

Must be a string.

Usage Guidelines Use this command to view RADIUS authentication server data.

show radius-dyn-auth

Displays RADIUS dynamic-author data.

Command Modes Exec

Syntax Description **`show radius radius-dyn-auth`**

Usage Guidelines Use this command to view RADIUS dynamic-author data.

show radius-dyn-auth clients

Displays RADIUS dynamic-author information.

Command Modes Exec

Syntax Description **`show radius dynauth clients`**

Usage Guidelines Use this command to view RADIUS dynamic-author information.

show resources info

Displays resource information.

Command Modes Exec

Syntax Description **`show resources [ info ]`**

Usage Guidelines Use this command to view information about the configured resources.

show role

Displays current role for the specified instance.

Command Modes Exec

Syntax Description **`show role instance-id`** *`instance_id`*

instance-id *instance_id*

Specify the instance ID for which role must be displayed.

Usage Guidelines Use this command to view current role for the specified instance.

show rpc all

Displays RPC configuration information.

Command Modes Exec

Syntax Description `show rpc [ all ]`

Usage Guidelines Use this command to view RPC configuration information.

show running-status info

Displays the system's current status information.

Command Modes Exec

Syntax Description `show running-status [ info ]`

Usage Guidelines Use this command to view the system's current status information.

show sessions

Displays pending session commits in the database.

Command Modes Exec

Syntax Description `show sessions`

Usage Guidelines Use this command to view pending session commits in the database.

show sessions affinity

Displays the affinity count per instance.

Command Modes Exec

Syntax Description `show sessions affinity`

Usage Guidelines Use this command to view the affinity count per instance.

show sessions commit-pending

Displays all pending session commits.

Command Modes Exec

Syntax Description `show sessions commit-pending`

Usage Guidelines Use this command to view all pending session commits.

show subscriber

Displays subscriber information.

Command Modes Exec

Syntax Description `show subscriber { all | supi supi_id }`

all

Specify all SUPIs or IMEIs.

gr-instance *gr_instance*

Specify the network function service under which to search.

imei *imei_id*

Specify the International Mobile Equipment Identity.

Must be a string of 15-16 characters.

namespace *namespace*

NOTE: This keyword is deprecated, use nf-service instead. Specify the product namespace under which to search.

Default Value: cisco-mobile-infra:none.

nf-service *nf_service*

Specify the network function service under which to search.

Default Value: cisco-mobile-infra:none.

supi *supi_id*

Specify the subscriber's SUPI ID.

Must be a string.

Usage Guidelines Use this command to view summary and detailed subscriber information for all subscribers or specific subscribers based on SUPI, IMEI, or all.

show subscriber

Shows BNG subscriber data.

Command Modes Exec

Syntax Description **show subscriber** *type* **[count | detail | sublabel** *subscriber_label* **]**

acct-sess-id ***accounting_session_id***

Specify the accounting session ID.

Must be a string of 1-64 characters.

count

Specify to display the number of sessions.

debug

Specify debug information.

detail

Specify to display detailed information.

sublabel ***subscriber_label***

Specify the subscriber label.

Must be a string of 1-64 characters.

type

Specify the type.

Must be one of the following:

- **dhcp**: DHCP information.
- **lns**: Lns information.
- **pppoe**: PPPoE information.
- **session**: SessionManager information.

Usage Guidelines Use this command to view BNG subscriber data.

show subscriber filter

Configures additional filters.

Command Modes

Exec

Syntax Description

show subscriber *type* **filter [afi** *address_family* **| iana-state-bound** *iana_bound_state* **| iapd-state-bound** *iapd_bound_state* **| ipv4-addr** *ipv4_address* **| ipv4-pool** *ipv4_pool_name* **| ipv4-range** *ipv4_address_range* **| ipv4-state-bound** *ipv4_bound_state* **| ipv6-addr** *ipv6_address* **| ipv6-addr-pool** *ipv6_address_pool_name* **| ipv6-addr-range** *ipv6_address_range* **| ipv6-pfx** *ipv6_prefix* **| ipv6-pfx-pool** *ipv6_prefix_pool* **| ipv6-pfx-range** *ipv6_prefix_range* **| mac** *mac_address* **| port-id** *upf_port_id* **| state** *session_state* **| up-subs-id** *up_subscriber_id* **| upf** *upf_name* **| upmgr** *sm_up_info* **| username** *session_user_name* **| vrf** *vrf_name* **]**

afi *address_family*

Specify the address family.

Must be one of the following:

- **dual**: Dual-Stack sessions.
- **ipv4**: IPv4-only sessions.
- **ipv6**: IPv6-only sessions.
- **pending**: Inflight sessions (applicable for SessMgr).

feat-template *feature_template_profile_name*

Specify name of the feature-template profile.

Must be a string.

iana-state-bound *iana_bound_state*

Specify the IANA bound state.

Must be one of the following:

- **iana-state-bound**

iapd-state-bound *iapd_bound_state*

Specify the IAPD bound state.

Must be one of the following:

- **iapd-state-bound**

ipv4-addr *ipv4_address*

Specify the IPv4 address in the format "*pool-name*/*ipv4-addr*".

Must be a string.

ipv4-pool ***ipv4_pool_name***

Specify name of the IPv4 pool.

Must be a string.

ipv4-range ***ipv4_address_range***

Specify the IPv4 address range in the format "*poolName*/*start-ip*".

Must be a string.

ipv4-state-bound ***ipv4_bound_state***

Specify the IPv4 bound state.

Must be one of the following:

- **ipv4-state-bound**

ipv6-addr-pool ***ipv6_address_pool_name***

Specify name of the IPv6 address pool.

Must be a string.

ipv6-addr-range ***ipv6_address_range***

Specify the IPv6 address range in the format "*poolName*/*start-ip*".

Must be a string.

ipv6-addr ***ipv6_address***

Specify the IPv6 address in the format "*pool-name*/*ipv6-addr*".

Must be a string.

ipv6-pfx-pool ***ipv6_prefix_pool***

Specify name of the IPv6 prefix pool.

Must be a string.

ipv6-pfx-range ***ipv6_prefix_range***

Specify the IPv6 prefix range in the format "*poolName*/*start-pfx*".

Must be a string.

ipv6-pfx ***ipv6_prefix***

Specify the IPv6 prefix in the format "*pool-name*/*ipv6-pfx*".

Must be a string.

mac ***mac_address***

Specify the MAC address in the "aabb.ccdd.eeff" format.

Must be a string.

port-id ***upf_port_id***

Specify the user plane function port ID in the format "*upf*/*portid*".

Must be a string.

ppp-type ***ppp_session_type***

Specify the PPP session type.

Must be one of the following:

- **lac**
- **pta**: PPPoE PTA subscriber.

session-id ***session_id***

Specify the L2TP session ID.

Must be an integer in the range of 1-65535.

sesstype ***session_type***

Specify the SM subscriber session type.

Must be one of the following:

- **ipoe**: IPOE subscribers.
- **lac**
- **lns**
- **ppp**: PPP subscribers.

smstate ***sm_session_state***

Specify the state of the SM session.

Must be one of the following:

- **created**
- **deleted**
- **established**

smupstate ***smup_session_state***

Specify the state of the SMUP session.

Must be one of the following:

- **smUpSessionCreated**
- **smUpSessionDeleted**
- **smUpSessionWait4SmCreate**

state *session_state*

Specify the session state.

Must be one of the following:

- **complete**: Specify the state is complete.
- **incomplete**: Specify the state is incomplete.

tunnel-dest-addr *tunnel_dest_address*

Specify the L2TP tunnel destination address.

Must be a string.

tunnel-id *tunnel_id*

Specify the L2TP tunnel ID.

Must be an integer in the range of 1-65535.

up-subs-id *up_subscriber_id*

Specify the UP subscriber ID.

Must be a string.

upf *upf_name*

Specify name of the user plane function.

Must be a string.

username *session_user_name*

Specify the user name of the session.

Must be a string.

Usage Guidelines Use this command to configure additional filters.

show subscriber opts

Configures command output modifiers.

Command Modes Exec

Syntax Description `detail`

Syntax Description `count`

count

Displays count of number of sessions.

detail

Displays detailed information.

Usage Guidelines Use this command to configure output modifiers.

show subscriber redundancy

Displays the key values of SRG groups

Command Modes Exec

Syntax Description **show subscriber redundancy [count | debug | detail | gr-instance** *gr_instance_id* **| srg-peer-id** *srg_peer_id* **| upf** *upf_name* **]**

count

Specify the count of SRG groups

debug

Specify debug information

detail

Specify to display detailed information.

gr-instance *gr_instance_id*

Specify the geo redundancy instance identity.

srg-peer-id *srg_peer_id*

Specify the identity of peer user plane for the group.

upf *upf_name*

Specify the name of user plane function.

Usage Guidelines Use this command to view the key values of SRG groups.

show subscriber redundancy-sync

Displays the subscriber reconciliation details.

Command Modes Exec

Syntax Description **show subscriber redundancy-sync [gr-instance** *gr_instance_id* **| srg-peer-id** *srg_peer_id* **| upf** *upf_name* **]**

gr-instance *gr_instance_id*

Specify the geo redundancy instance identity.

srg-peer-id *srg_peer_id*

Specify the identity of peer user plane for the SRG.

upf *upf_name*

Specify the name of user plane function.

Usage Guidelines Use this command to view the subscriber reconciliation details.

show subscriber session

Displays the session manager CDL record keys per session.

Command Modes Exec

Syntax Description **show subscriber session [detail | filter { smupstate {** *upf_name*/**smUpSessionCreated } }]**

detail

Display the session details from SM CDL record.

filter { smupstate { *upf_name*/smUpSessionCreated } }

Display whether the session is created in the respective UPF for the SRG sessions.

Usage Guidelines Use this command to view the session manager CDL record keys per session.

show subscriber synchronize

Synchronize information.

Command Modes Exec

Syntax Description **show subscriber synchronize [srg-peer-id** *peer_id* **| upf** *upf_info* **]**

Syntax Description **show subscriber synchronize-cp upf** *upf_info*

synchronise-cp

Specify to synchronise CP information.

Must be one of the following:

- **synchronize-cp**

synchronize

Specify to synchronise UP information.

Must be one of the following:

- **synchronize**

srg-peer-id *peer_id*

Specify the identity of peer user plane for the group.

upf *upf_info*

Specify UPF information.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to synchronise information.

show test-radius accounting

Tests RADIUS accounting server function.

Command Modes Exec

Syntax Description **test-radius accounting { all [[client-nas** *nas_ip_address* **] [username** *user_name* **]] | server** *server_ip_address* **{ [client-nas** *nas_ip_address* **] port** *server_port_number* **[username** *user_name* **] } | server-group [[client-nas** *nas_ip_address* **] [username** *user_name* **]] }**

all

Specify to test all configured servers.

Must be one of the following:

- **all**

client-nas *nas_ip_address*

Specify the IP address of the client NAS.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

-Or-

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

port *server_port_number*

Specify the RADIUS server port number.

Must be an integer in the range of 1-65535.

server-group *server_group_name*

Specify name of the sever group.

Must be a string of 1-64 characters.

server *server_ip_address*

Specify IP address of the RADIUS server.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

-Or-

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

username *user_name*

Specify the user name.

Must be a string of 1-64 characters.

Default Value: test.

Usage Guidelines

Use this command to test RADIUS accounting server function.

show test-radius authentication

Tests RADIUS authentication server.

Command Modes

Exec

Syntax Description

test-radius authentication { all [[client-nas *nas_ip_address* **] [password** *user_password* **] [username** *user_name* **]] | server** *server_ip_address* **{ [client-nas** *nas_ip_address* **] [password** *user_password* **] port** *server_port_number* **[username** *user_name* **] } | server-group [[client-nas** *nas_ip_address* **] [password** *user_password* **] [username** *user_name* **]] }**

all

Specify to test all configured servers.

Must be one of the following:

- **all**

client-nas *nas_ip_address*

Specify the IP address of the client NAS.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

-Or-

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

password *user_password*

Specify the password for user with authentication verified.

Must be a string of 1-64 characters.

Default Value: test.

port *server_port_number*

Specify the RADIUS server port number.

Must be an integer in the range of 1-65535.

server-group *server_group_name*

Specify name of the sever group.

Must be a string of 1-64 characters.

server *server_ip_address*

Specify IP address of the RADIUS server.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

-Or-

Must be a string in the ipv6-address pattern. For information on the ipv6-address pattern, see the *Input Pattern Types* chapter.

username *user_name*

Specify the user name.

Must be a string of 1-64 characters.

Default Value: test.

Usage Guidelines

Use this command to test RADIUS authentication server.

show-defaults

Displays the default configuration.

Command Modes Exec

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

{ false | true }

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

Must be either "false" or "true".

Usage Guidelines Use this command to view the default configuration.

smiuser

Configures the Subscriber Microservices Infrastructure (SMI) user account parameters.

Command Modes Exec

Syntax Description **smiuser { add-group groupname** *group_name* **| add-user { username** *username* **| password** *password* **} | change-password { username** *username* **| current_password** *current_password* **| new_password** *new_password* **| confirm_password** *new_password* **| password_expire_days** *expire_days* **} | change-self-password { current_password** *current_password* **| new_password** *new_password* **| confirm_password** *new_password* **| password_expire_days** *expire_days* **} | delete-group groupname** *group_name* **| delete-user username** *username* **| unassign-user-group { groupname** *groupname_pam* **| username** *username_pam* **} | update-password-length length** *password_length* **}**

username *username*

Specify the username.

Must be a string.

password *password*

Specify the user password.

Must be a string.

confirm_password *new_password*

Confirm the new password.

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.

password_expire_days *expire_days*

Specify the number of days before the password expires.

Must be an integer.

groupname *group_name*

Specify the group name.

Must be a string.

groupname *groupname_pam*

Specify the group name in PAM.

Must be a string.

username *username_pam*

Specify the user name in PAM.

Must be a string.

length *password_length*

Specify the minimum password length.

Must be an integer.

Usage Guidelines Use this command to configure the smiuser parameters.

subscriber

Configures subscriber parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **`subscriber { event-trace-disable | event-trace-max-count`** *`event_trace_count`*

event-trace-disable

Disable subscriber event tracing. cnBNG uses event traces for session level event history in CDL records.

event-trace-max-count *event_trace_count*

Specify the number of entries for event tracing.

Must be an integer in the range of 1-8192.

Default Value: 100.

Usage Guidelines Use this command to configure subscriber parameters.

subscriber featurette dhcp-lease-reservation enable

Enables/disables DHCP IP Lease Reservation.

Command Modes Exec > Global Configuration (config)

Syntax Description `[ no ] subscriber featurette dhcp-lease-reservation enable`

subscriber featurette dhcp-lease-reservation enable

Enables DHCP IP Lease Reservation

no subscriber featurette dhcp-lease-reservation enable

Disables DHCP IP Lease Reservation

Usage Guidelines Use this command to enable or disable DHCP IP Lease Reservation.

subscriber-redundancy group

Configures subscriber geographical redundancy group.

Command Modes Exec > Global Configuration > Userplane Configuration (config-user-plane-userplane_name)

Syntax Description **subscriber-redundancy group** *group_name* **{ disable | domain-identifier** *domain-name* **| peer-identifier** *peer-id* **| port-id-map port-name** *port-id name port-id*| **[preferred-role-active] [revertive-timer** *sec* **] }**

subscriber-redundancy group *group_name*

Specifies the name of the subscriber redundancy group that is unique to a user plane.

disable

Disables an SRG group without deleting the entire configuration of the group. The behaviour is same as removing an SRG group.

domain-identifier *domain_name*

Specifies the domain name to identify all groups common between two userplanes.

peer-identifier *peer_id*

Identifies the peer user-plane for the group. This identifier must be unique across all groups in the control plane. The same peer-identifier must be configured in the peer user-plane.

port-id-map port-name *port_name port_id*

Specifies the mapping of access interfaces between user planes. At least one port-id-map must be configured.

preferred-role-active

This is an optional configuration.

Sets the preferred role active for user plane. If preferred-role-active is not configured, none of the UPs under the SRG group will be active. Default value: false.

revertive-timer *sec*

This is an optional configuration.

Specifies the revertive timer in seconds. revertive_timer_value must be an integer in the range of 60 to 3600. This command is available only when **preferred-role-active** is configured.

Usage Guidelines Use this command to configure the subscriber redundancy group (SRG) configuration.

subscriber redundancy session-synchronize add

Synchronizes the sessions with the standby UP.

Command Modes Exec

Syntax Description

```
subscriber-redundancy session-synchronize add { domain [ domain_ID ] |
duration timeout_value | peer-id [ peer_id ] | target-upf upf_id | tps value |
 upf [ upf_id ] }
```

domain [*domain_id*]

Specifies the list of SRG domains.

duration *timeout_value*

Specifies the maximum timeout value in minutes.

peer-id [*peer_id*]

Specifies the list of SRG peer identities.

target-upf *upf_id*

Specifies the identity of target UP.

tps *value*

Specifies the maximum number of allowed transactions per second (TPS).

upf [*upf_id*]

Specifies the list of UPs.

subscriber redundancy session-synchronize delete

Deletes SRG sessions.

Command Modes Exec

Syntax Description **subscriber-redundancy session-synchronize delete { domain [** *domain_ID* **] | duration** *timeout_value* **| peer-id [** *peer_id* **] | target-upf** *upf_id* **| tps** *value* **| upf [** *upf_id* **] }**

domain [*domain_id*]

Specifies the list of SRG domains.

duration *timeout_value*

Specifies the maximum timeout value in minutes.

peer-id [*peer_id*]

Specifies the list of SRG peer identities.

target-upf *upf_id*

Specifies the identity of target UP.

tps *value*

Specifies the maximum number of allowed transactions per second (TPS).

upf [*upf_id*]

Specifies the list of UPs.

subscriber reset-token

Configure to reset the in-use token for the specified protocol.

Command Modes Exec

Syntax Description **subscriber reset-token { dhcp | pppoe }**

subscriber reset-token { dhcp | pppoe }

Reset the in-use token to zero for DHCP or PPPoE.

Usage Guidelines Use this command to reset the in-use token to zero.

subscriber route-synchronize

Synchronizes routes to UPF.

Command Modes Exec

Syntax Description **subscriber route-synchronize upf** *user_plane_name*

upf *user_plane_name*

Specify name of the user plane function.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to synchronize routes to UPF.

subscriber session-synchronize

Synchronizes sessions to UPF.

Command Modes Exec

Syntax Description **subscriber session-synchronize upf** *user_plane_name* **[abort | timeout** *sla_timeout* **]**

abort

Specify to abort synchronization.

timeout *sla_timeout*

Specify the SLA timeout duration in seconds.

Must be an integer in the range of 10-1800.

upf *user_plane_name*

Specify name of the user plane function.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to synchronize sessions to UPF.

subscriber session-synchronize-cp

Synchronizes sessions on CP.

Command Modes Exec

Syntax Description **subscriber session-synchronize-cp upf** *user_plane_name* **[abort | timeout** *timeout_value* **| tps** *tps* **]**

abort

Specify to abort synchronization.

timeout *timeout_value*

Specify the timeout duration in minutes.

Must be an integer in the range of 2-100.

tps *tps*

Specify the TPS.

Must be an integer in the range of 40-4000.

upf *user_plane_name*

Specify name of the user plane function.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to synchronize sessions on CP.

subscriber token

Configures FSOL token mechanism.

Command Modes Exec > Global Configuration (config)

Syntax Description **subscriber token { dhcp | pppoe }** *token_count*

subscriber token { dhcp | pppoe } *token_count*

Set the maximum token available for FSOL pod.

token_count is cumulative across instances. For example, if there are 4 DHCP pods and DHCP token is set as 2000, then 500 tokens will be assigned for each pod

- **dhcp**: Set the DHCP pod token count.
- **pppoe**: Set the PPPoE pod token count.

Usage Guidelines Use this command to configure FSOL token mechanism.

system

Configures the NF's system operations.

Command Modes Exec

Syntax Description **system { ops-center stop | synch { start | stop } | upgrade | uuid-override new-uuid** *uuid_value* **}**

ops-center stop

Stop the synching of configuration.

synch { start | stop }

Starts or stops the synching of configuration,

upgrade

Initiates the upgrade of a product.

uuid-override new-uuid *uuid_value*

Change the Universally Unique Identifier (UUID) to a new value.

Must be a string.

Usage Guidelines Use this command to display the NF's system operations.

terminal

Configures the type of terminal.

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 type.

timestamp

Configures the timestamp parameters.

Command Modes Exec

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

{ disable | enable }

Enable or disable the timestamp display.

Usage Guidelines Use this command to configure the timestamp.

user-plane

Configures the userplane configuration.

Command Modes Exec > Global Configuration (config)

Syntax Description **`user-plane`** *`userplane_name`* **`[ [ offline ] [ subscriber-profile`** *`subscriber_profile`* **`] ]`**

offline

Specify as offline.

subscriber-profile *subscriber_profile*

Specify the Subscriber Profile to associate at current level.

user-plane *userplane_name*

Specify name of the userplane.

Must be a string of 1-128 characters.

Usage Guidelines Use this command to configure the userplane configuration. The CLI prompt changes to the Userplane Configuration mode (config-user-plane-<userplane_name>).

user-plane flowctrl-group

Configures the associated flow control group in user plane.

Command Modes Exec > Global Configuration > Userplane Configuration (config-user-plane-*userplane_name*)

Syntax Description **`flowctrl-group`** `group_name`

flowctrl-group group_name

Specify the flow control group to be associated.

Usage Guidelines Use this command to associate the flow control group in user plane.

user-plane peer-address

Configures the userplane IP address.

Command Modes Exec > Global Configuration > Userplane Configuration (config-user-plane-*userplane_name*)

Syntax Description **peer-address ipv4** *ipv4_address*

ipv4 *ipv4_address*

Specify the IPv4 address.

Must be a string in the ipv4-address pattern. For information on the ipv4-address pattern, see the *Input Pattern Types* chapter.

Usage Guidelines Use this command to configure the userplane IP address.

user-plane port-id

Configures Port Identifier parameter.

Command Modes Exec > Global Configuration > Userplane Configuration (config-user-plane-*userplane_name*)

Syntax Description **port-id** *port_id* **[subscriber-profile** *subscriber_profile* **]**

port-id *port_id*

Specify the port identifier.

Must be a string of 1-128 characters.

subscriber-profile *subscriber_profile*

Specify the Subscriber Profile to associate to the Port Identifier level.

Usage Guidelines Use this command to configure the Port Identifier parameter. The CLI prompt changes to the Port ID Configuration mode (config-port-id-<port_id>).

who

Displays information on currently logged on users.

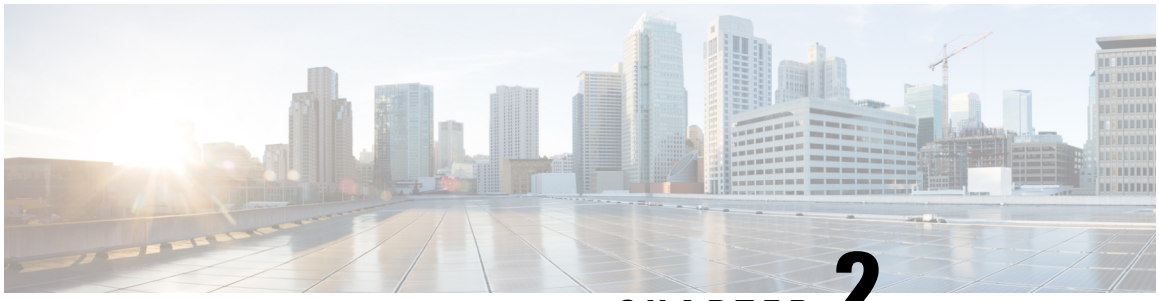
Command Modes Exec

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 (IP address), Protocol, Date, and Mode information.



CHAPTER 2

Input Pattern Types

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arg-type

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

Pattern:
'\*'
```

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

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

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

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

crypt-hash

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

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

A value of this type matches one of the forms:

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

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

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

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

This type defines the following hash functions:

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

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

Reference:

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

date-and-time

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

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

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

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

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

Reference:

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

domain-name

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

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

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

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

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

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

Reference:

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

dotted-quad

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

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

hex-list

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

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

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

hex-string

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

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

ipv4-address

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

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

ipv4-address-and-prefix-length

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

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

ipv4-address-no-zone

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

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

ipv4-prefix

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

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

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

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

ipv6-address

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

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

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

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

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

Reference:

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

ipv6-address-and-prefix-length

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

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

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

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

ipv6-address-no-zone

Pattern:

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

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

Reference:

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

ipv6-prefix

Pattern:

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

Pattern:

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

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

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

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

Reference:

- RFC 5952: A Recommendation for IPv6 Address Text Representation

mac-address

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

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

Reference:

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

object-identifier

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

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

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

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

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

Reference:

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

object-identifier-128

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

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

Reference:

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

octet-list

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

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

phys-address

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

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

Reference:

- RFC 2579: Textual Conventions for SMIv2

sha-256-digest-string

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

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

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

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

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

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

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

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

Reference:

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

sha-512-digest-string

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

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

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

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

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

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

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

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

Reference:

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

size

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

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

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

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

uuid

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

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

Reference:

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

yang-identifier

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

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

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

Reference:

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