Cloud Native BNG Control Plane Command Reference Guide, Release 2021.03.0

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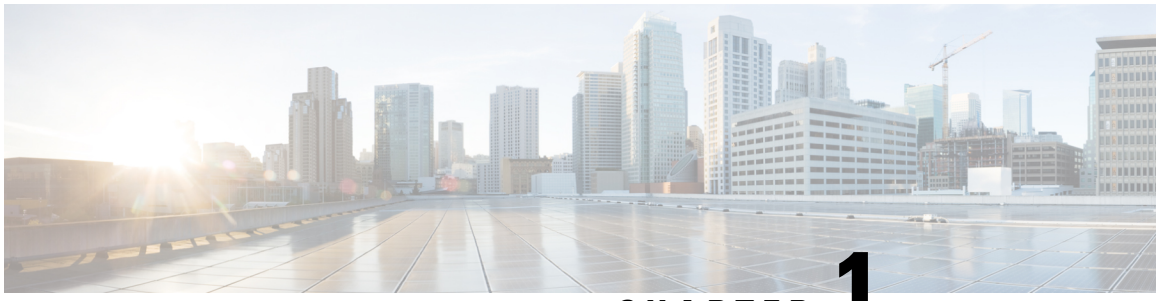

CHAPTER 1

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 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* **]**

force

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

ipv4-pool ***ipv4_pool_name***

Specify the IPv4 address pool name.

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 the IPv6 address pool name.

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 the IPv6 prefix pool name.

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

Must be a string of 1-64 characters.

ppp-type *ppp_session_type*

Specify the PPP session type.

Must be one of the following:

- **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 the user plane function name.

Must be a string of 1-64 characters.

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 { [timeout** *ping_timeout* **] [interval** *ping_interval* **] }**

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.

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 reject code parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit overload reject-code** *reject_code*

reject-code *reject_code*

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

Must be an integer.

Usage Guidelines Use this command to configure the overload reject code parameter.

client inbound interface limit pending

Configures pending request limit parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit pending request** *pending_request_limit*

request *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 reject code parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit overload reject-code** *reject_code*

reject-code *reject_code*

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

Must be an integer.

Usage Guidelines Use this command to configure the overload reject code parameter.

client inbound limit pending

Configures pending request limit parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit pending request** *pending_request_limit*

request *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 host ping parameters.

Command Modes Exec > Global Configuration

Syntax Description **host ping timeout** *ping_timeout* **interval** *ping_interval*

interval *ping_interval*

Specify the time interval, in milliseconds, 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 host ping parameters.

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 host ping parameters.

Command Modes Exec > Global Configuration

Syntax Description **host ping timeout** *ping_timeout* **interval** *ping_interval*

interval *ping_interval*

Specify the time interval, in milliseconds, 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 host ping parameters.

client outbound interface limit pending

Configures pending response message limit parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit 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 the pending response message limit parameter.

client outbound limit pending

Configures pending response message limit parameter.

Command Modes Exec > Global Configuration

Syntax Description **limit 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 the pending response message limit parameter.

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.

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.

datastore dbs

Configures DBS parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **datastore dbs** *dbs_name*

dbs *dbs_name*

Specify name of the DBS.

Must be a string.

Usage Guidelines Use this command to configure the DBS parameters.

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** *host_name* **port** *port_number*

endpoints *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 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 slice-name`** *`slice_name`*

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`** *`host_name`* **`port`** *`port_number`*

endpoints *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 endpoint parameters.

deployment

Configures product configuration.

Command Modes Exec > Global Configuration

Syntax Description

deployment { app-name *application_name* **| cluster-name** *cluster_name* **| dc-name** *datacenter_name* **| model** *deployment_model* **}**

app-name *application_name*

Specify the application name.

Must be a string.

cluster-name *cluster_name*

Specify the cluster name.

Must be a string.

dc-name *datacenter_name*

Specify the datacenter name.

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 configuration.

deployment resource

Configures CPU resources.

Command Modes

Exec > Global Configuration

Syntax Description

deployment resource cpu *cpu_resources*

cpu *cpu_resources*

Specify the CPU resources available in millicores.

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

Default Value: 18000.

Usage Guidelines Use this command to configure CPU resources.

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.

diagnostics

Displays diagnostics information.

Command Modes Exec

Syntax Description `show diagnostics`

Usage Guidelines Use this command to view diagnostics information.

diagnostics info

Displays diagnostics information.

Command Modes Exec

Syntax Description `show diagnostics info`

Usage Guidelines Use this command to view diagnostics 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 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.

subscribers *subscribers_edr_reporting*

Specify the subscribers for whom EDR reporting must be enabled.

Must be a string.

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

Usage Guidelines Use this command to configure EDR parameters.

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 ]`

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.

{ transaction | transaction-collision }

Specify name of the EDR file.

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-*transaction_transaction-collision*)

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-*transaction_transaction-collision*)

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-*transaction_transaction-collision*)

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-*transaction_transaction-collision*)

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-*transaction_transaction-collision*) > 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-*transaction_transaction-collision*) > 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-*transaction_transaction-collision*) > 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.

endpoint all

Displays endpoint status.

Command Modes Exec

Syntax Description `show endpoint all`

Usage Guidelines Use this command to view endpoint status for all endpoints.

endpoint info

Displays endpoint information.

Command Modes Exec

Syntax Description `show endpoint info`

Usage Guidelines Use this command to view endpoint information.

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 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 reset role.

Command Modes Exec

Syntax Description **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 Use this command to configure Geo Admin Controller for reset role.

geopodmonitor pods

Configures configuration of pods to be monitored.

Command Modes Exec > Global Configuration

Syntax Description **geopodmonitor pods** *pod_name* **retryCount** *retry_count* **retryInterval** *retry_interval* **retryFailOverInterval** *retry_interval* **failedReplicaPercent** *failed_replica_precentage*

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.

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 1-5.

retryFailOverInterval *retry_interval*

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

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

retryInterval ***retry_interval***

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

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

pod_name

Specify the name of the pod to be monitored.

Must be a string.

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

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* **] [url** *helm_repo_url* **] [username** *helm_repo_username* **] [password** *helm_repo_password* **]]**

access-token *helm_repo_access_token*

Specify the access token for 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.

helm_repo_name

Specify the name of the Helm repository.

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

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 podType** *pod_type* **level** *verbose_level*

level *verbose_level*

Specify the verbosity level.

Must be one of the following:

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

Default Value: trace.

podType *pod_type*

Specify the pod type.

Must be one of the following:

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

Usage Guidelines Use this command to configure verbose configuration 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.

infra transaction loop category threshold

Configures the loop detection interval parameter.

Command Modes Exec > Global Configuration (config)

Syntax Description **infra transaction 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

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

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.

Command Modes Exec > Global Configuration (config)

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

id *instance_id*

Specify the instance ID.

Usage Guidelines Use this command to configure the instance ID. 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

Syntax Description **endpoint** *endpoint_type* **{ replicas** *replicas_per_node* **| nodes** *node_replicas_for_resiliency* **| loopbackEth** *loopbackEth* **| loopbackPort** *loopbackPort* **}**

certificate-name *certificate_alias_name*

Specify the alias name for the certificate.

eptype *endpoint_type*

Specify the endpoint type.

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 *internal_vip*

Specify the internal VIP.

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 interface

Configures the interface type.

Command Modes Exec > Global Configuration

Syntax Description **endpoint ep interface** *interface_type*

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.

loopbackEth *loopback_eth*

Specify the loopback Eth.

Must be a string.

loopbackPort *loopback_port*

Specify the loopback port.

Must be an integer.

uri-scheme *uri_scheme*

Specify the URI scheme.

Must be one of the following:

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

Default Value: http.

interface_type

Specify the interface type.

Usage Guidelines Use this command to configure the interface type.

instance instance-id endpoint ep interface dispatcher

Displays the dispatcher queue support details for the interface.

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

Syntax Description **dispatcher { cache { false | true } | capacity** *queue_capacity* **| count** *dispatcher_queues_count* **| expiry** *cache_entry_expiry_duration* **| nonresponsive** *cache_entry_expiry_duration* **| outbound { false | true } |rate-limit** *queue_rate_limit* **| threshold** *outstanding_requests_per_queue_cache* **}**

cache { false | true }

Specify to enable or disable disable retransmission cache support.

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 *cache_entry_expiry_duration*

Specify, in milliseconds, the responded cache entry expiry duration.

Must be an integer.

Default Value: 60000.

nonresponsive *cache_entry_expiry_duration*

Specify, in milliseconds, the non-responsive cache entry expiry duration.

Must be an integer.

Default Value: 30000.

outbound { false | true }

Specify to enable or disable queue support for outbound messages.

Must be one of the following:

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

Default Value: true.

rate-limit *queue_rate_limit*

Specify the rate limit for each queue.

Must be an integer.

Default Value: 0.

threshold *outstanding_requests_per_queue_cache*

Specify the outstanding requests per queue cache.

Must be an integer.

Default Value: 30000.

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

instance instance-id endpoint ep interface internal base-port

Configures the internal base-port to start endpoint parameter.

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

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 internal base-port to start endpoint parameter.

instance instance-id endpoint ep interface overload-control

Configures Overload Control threshold configuration.

Command Modes Exec > Global Configuration

Syntax Description **overload-control** *options*

Usage Guidelines Use this command to configure Overload Control threshold configuration.

instance instance-id endpoint ep interface overload-control client

Configures Overload Control threshold configuration per client.

Command Modes Exec > Global Configuration

Syntax Description **client** *options*

Usage Guidelines Use this command to configure Overload Control threshold configuration per client.

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

Configures Overload Control threshold levels.

Command Modes Exec > Global Configuration

Syntax Description **threshold** *options*

Usage Guidelines Use this command to configure Overload Control threshold levels.

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

Configures the critical thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **critical { 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 critical thresholds for overload control protection.

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

Configures the high thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **high { high** *high_threshold_limit* **| action** *high_threshold_action* **}**

action *high_threshold_action*

Specify the action to be taken if the high threshold 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 high thresholds for overload control protection.

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

Configures the low thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **low { low** *low_threshold_limit* **| action** *low_threshold_action* **}**

action *low_threshold_action*

Specify the action to be taken if the low threshold 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 low thresholds for overload control protection.

instance instance-id endpoint ep interface overload-control endpoint

Configures Overload Control threshold configuration.

Command Modes Exec > Global Configuration

Syntax Description **endpoint** *options*

Usage Guidelines Use this command to configure Overload Control threshold configuration.

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

Configures Overload Control threshold levels.

Command Modes Exec > Global Configuration

Syntax Description **threshold** *options*

Usage Guidelines Use this command to configure Overload Control threshold levels.

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

Configures the critical thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **critical { 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 critical thresholds for overload control protection.

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

Configures the high thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **high { high** *high_threshold_limit* **| action** *high_threshold_action* **}**

action *high_threshold_action*

Specify the action to be taken if the high threshold 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 high thresholds for overload control protection.

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

Configures the low thresholds for overload control protection.

Command Modes Exec > Global Configuration

Syntax Description **low { low** *low_threshold_limit* **| action** *low_threshold_action* **}**

action *low_threshold_action*

Specify the action to be taken if the low threshold 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 low thresholds for overload control protection.

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

Configures the message configuration parameters.

Command Modes Exec > Global Configuration (config)

Syntax Description **messageConfigs msg-type** *message_type* **msg-priority** *message_priority* **pending-request** *pending_requests* **priority** *message_priority* **queue-size** *queue_size* **rate-limit** *rate_limit* **reject-threshold** *reject_threshold*

msg-priority *message_priority*

Specify the priority of the message.

Must be one of the following:

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

msg-type *message_type*

Specify the message type.

pending-request *pending_requests*

Specify the pending requests count in virtual queue.

Must be an integer.

priority *message_priority*

Specify the priority of messages to start rejecting if overload is reached.

Must be an integer.

queue-size *queue_size*

Specify the 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 interface overload-control msg-type messageConfigs discard-behavior

Configures the discard behavior to apply when the interface is overloaded.

Command Modes Exec > Global Configuration (config)

Syntax Description **`discard-behavior reject reject-code`** *`reject_status_code`* **`drop { false | true }`**

drop { false | true }

Specify whether to drop if interface is overloaded.

Must be one of the following:

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

Default Value: false.

reject-code *reject_status_code*

Specify the reject status code if the interface is overloaded.

Must be an integer.

reject

Specify to reject the incoming message if the interface is overloaded.

Usage Guidelines Use this command to configure the discard behavior to apply when the interface is overloaded.

instance instance-id endpoint ep interface sla

Configures SLA parameters.

Command Modes Exec > Global Configuration

Syntax Description **endpoint ep interface sla { response** *response_time* **| procedure** *procedure_time* **}**

procedure *procedure_time*

Specify the procedure time in milliseconds.

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

response *response_time*

Specify the response time in milliseconds.

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 VIP IP parameters.

Command Modes Exec > Global Configuration

Syntax Description **endpoint ep interface vip { vip-ip** *vip_ip* **| vip-port** *vip_port* **| offline }**

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*

Specify the host IP address.

Must be a string.

vip-port *vip_port*

Specify the port number.

Must be an integer.

Usage Guidelines Use this command to configure VIP IP parameters.

instance instance-id endpoint ep interface vip6

Configures VIP IP6 parameters.

Command Modes Exec > Global Configuration

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

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 internal base-port

Configures the internal base-port to start endpoint parameter.

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

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 internal base-port to start endpoint parameter.

instance instance-id endpoint ep retransmission

Configures PFCP retransmission configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description **retransmission timeout** *pfcp_retransmission_timeout* **max-retry** *max_pfcp_request_retries*

max-retry *max_pfcp_request_retries*

Specify the maximum number of times PFCP request retry attempts. Configuring Zero(0) disables retransmission.

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

Default Value: 1.

timeout *pfcp_retransmission_timeout*

Specify the PFCP retransmission time interval in seconds. Configuring Zero(0) disables retransmission.

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

Default Value: 15.

Usage Guidelines Use this command to configure PFCP retransmission configuration parameters.

instance instance-id endpoint ep system-health-level

Configures the system health level parameters.

Command Modes Exec > Global Configuration

Syntax Description **endpoint ep system-health-level** *options*

Usage Guidelines Use this command to configure the system health level parameters.

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

Configures system health crash parameters.

Command Modes Exec > Global Configuration

Syntax Description **crash { cpu-percent** *cpu_percent* **| memory-in-mbs** *memory* **| num-of-goroutine** *number_of_goroutine* **}**

cpu-percent *cpu_percent*

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 *number_of_goroutine*

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

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

cpu-percent *cpu_percent*

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

Syntax Description **warn { cpu-percent** *cpu_percent* **| memory-in-mbs** *memory* **| num-of-goroutine** *number_of_goroutine* **}**

cpu-percent *cpu_percent*

Specify the CPU percentage.

Must be an integer.

Default Value: 50.

memory-in-mbs *memory*

Specify the memory in MB.

Must be an integer.

Default Value: 512.

num-of-goroutine *number_of_goroutine*

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 > Endpoint Confgiuration

Syntax Description **vip-ip** *vip_ip_address* **[[vip-port** *port_number* **] [offline]]**

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* **[vip-ipv6-port** *vip_ipv6_port_number* **| offline]**

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* **system-id** *system_id* **cluster-id** *cluster_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 dp

Displays IPAM data-plane allocations.

Command Modes Exec

Syntax Description `show ipam dp`

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

ipam dp-tag

Displays data-plane tag-related allocations.

Command Modes Exec

Syntax Description `show ipam dp-tag`

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

ipam instance

Configures instance parameters.

Command Modes Exec > Global Configuration

Syntax Description **ipam instance** *instance_id*

instance_id

Specify the instance ID.

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

Usage Guidelines Use this command to configure the instance parameters.";

ipam instance address-pool

Configures IPAM address pools.

Command Modes Exec > Global Configuration > Instance Configuration

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-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 the VRF name.

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 section.

pool_name

Specify the address pool's name.

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 section.

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 > Instance Configuration > Address Pool Configuration

Syntax Description **ipv4 address-range** *start_ipv4_address end_ipv4_address* **[offline]**

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 section.

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 section.

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 section.

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 > Instance Configuration > Address Pool Configuration

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

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 section.

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 section.

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 > IPAM Configuration

Syntax Description **split-size [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.

ipam instance address-pool ipv4 threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration > IPAM Configuration

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 > Instance Configuration > Address Pool Configuration > Address Ranges Configuration

Syntax Description **ipv6 address-ranges 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 section.

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 section.

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 > Instance Configuration > Address Pool Configuration

Syntax Description **ipv6 address-ranges 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 section.

Usage Guidelines Use this command to configure IPv4 prefix range.

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

Configures chunk split size parameters.

Command Modes Exec > Global Configuration > IPAM Configuration

Syntax Description **`split-size [ 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.

ipam instance address-pool ipv6 address-ranges threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration > IPAM Configuration

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 > Instance Configuration > Address Pool Configuration > Prefix Ranges Configuration

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 section.

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 > IPAM Configuration

Syntax Description **split-size [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.

ipam instance address-pool ipv6 prefix-ranges threshold

Configures pool thresholds.

Command Modes Exec > Global Configuration > IPAM Configuration

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 static pool parameters.

Command Modes Exec > Global Configuration

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 section.

Usage Guidelines Use this command to configure 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 > IPAM Configuration

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 > Instance Configuration

Syntax Description **`ipam 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 > Instance Configuration

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

host *ip_address*

Specify the IPAM server's IP address.

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

-Or-

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

port *port_number*

Specify the IPAM server's port number.

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 > IPAM Configuration

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 pool

Displays pool allocation information.

Command Modes Exec

Syntax Description `show ipam pool`

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 k8 BNG parameters.

Command Modes Exec > Global Configuration

Syntax Description `bng etcd-endpoint etcd_endpoint datastore-endpoint datastore_endpoint coverage-build { false | true }`

etcd-endpoint *etcd_endpoint*

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

Default Value: etcd:2379.

datastore-endpoint *datastore_endpoint*

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

etcd-endpoint *etcd_endpoint*

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

Default Value: datastore-ep-session:8882.

coverage-build { false | true }

Specify to enable or disable coverage 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*

etcd-endpoint *etcd_endpoint*

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

Usage Guidelines Use this command to configure k8 BNG parameters.

k8 bng tracing

Configures tracing configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description **tracing enable enable-trace-percent** *tracing_percentage* **append-messages { false | true } endpoint** *tracing_ep_config*

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_ep_config*

Specify the tracing endpoint configuration. For example, *hostname*:*port*

Default Value: jaeger-collector:9411.

Usage Guidelines Use this command to configure tracing configuration parameters.

k8 label pod-group-config

Configures K8 node affinity label pod group configuration.

Command Modes Exec > Global Configuration

Syntax Description **k8 label pod-group-config pod-group** *pod_group* **key** *label_key* **value** *label_value*

key *label_key*

Specify the key for the label.

Must be a string.

pod-group *pod_group*

Specify the pod group for the VMs.

Must be one of the following:

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

value *label_value*

Specify the value for the label.

Must be a string.

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 the K8s cluster name.

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 the K8s node name.

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 local instance parameters.

Command Modes Exec > Global Configuration

Syntax Description **local-instance instance** *instance_id*

instance *instance_id*

Specify the local instance ID.

Usage Guidelines Use this command to configure local instance parameters.

logging

Configures logging parameters.

Command Modes Exec > Global Configuration

Syntax Description **logging** *options*

Usage Guidelines Use this command to configure the logging parameters.

logging async

Configures async logging parameters.

Command Modes Exec > Global Configuration

Syntax Description **async** *options*

Usage Guidelines Use this command to configure async logging parameters.

logging async application enable

Enables async logging.

Command Modes Exec > Global Configuration

Syntax Description **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

Syntax Description **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

Syntax Description **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

Syntax Description **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

Syntax Description **`level`** *`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

Syntax Description **logger** *log_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

Syntax Description **logger level** *log_type_options*

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

Syntax Description **`transaction`** *`transaction_log_parameters`*

duplicate

Specify to enable duplicate in transaction logging.

Must be one of the following:

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

Default Value: disable.

max-file-size *max_file_size*

Specify the transaction file size in MB.

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

Default Value: 50.

max-rotation *max_rotation*

Specify the maximum number of file rotations.

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

Default Value: 10.

message

Specify to enable messages in transaction logging.

Must be one of the following:

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

Default Value: disable.

persist

Specify 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.

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.

peers

Displays peer information.

Command Modes Exec

Syntax Description

```
show peers
```

Usage Guidelines Use this command to view peer information.

peers all

Displays information for all peers.

Command Modes Exec

Syntax Description **`show peers all`**

Usage Guidelines Use this command to view information for all peers.

profile aaa

Configures AAA profiles.

Command Modes Exec > Global Configuration (config)

Syntax Description **`profile aaa`** *`aaa_profile_name`*

aaa_profile_name

Specify the AAA profile name.

Usage Guidelines Use this command to configure AAA profiles.

profile aaa accounting

Configures accounting configuration parameters.

Command Modes Exec > Global Configuration (config) > AAA Profile Configuration (config-aaa-*aaa_profile_name*)

Syntax Description **`accounting method-order`** *`method_list_order`*

method-order *method_list_order*

Specify the method list order.

Must be one of the following:

- **radius**

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

Usage Guidelines Use this command to configure accounting configuration parameters.

profile aaa authentication

Configures authentication parameters.

Command Modes Exec > Global Configuration (config) > AAA Profile Configuration (config-aaa-*aaa_profile_name*)

Syntax Description **authentication method-order** *method_list_order*

method-order *method_list_order*

Specify the method list order.

Must be one of the following:

- **radius**

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

Usage Guidelines Use this command to configure authentication parameters.

profile aaa authorization

Configures authorization parameters.

Command Modes Exec > Global Configuration (config) > AAA Profile Configuration (config-aaa-*aaa_profile_name*)

Syntax Description **authorization**

password *default_password*

Specify the default password.

Usage Guidelines Use this command to configure authorization parameters. The CLI prompt changes to the Authorization Configuration mode.

profile aaa authorization type subscriber

Configures authorization type subscriber.

Command Modes Exec > Global Configuration (config) > AAA Profile Configuration (config-aaa-*aaa_profile_name*) > Authorization Configuration (config-authorization)

Syntax Description **type subscriber method-order** *method_list_order*

method-order *method_list_order*

Specify the method list order.

Must be one of the following:

- **radius**

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

Usage Guidelines Use this command to configure authorization type subscriber.

profile aaa authorization username

Configures the default user name.

Command Modes Exec > Global Configuration (config) > AAA Profile Configuration (config-aaa-*aaa_profile_name*) > Authorization Configuration (config-authorization)

Syntax Description **username { format** *attribute_format* **| identifier** *identifier_type* **| value** *user_name* **}**

value *user_name*

Specify the user name.

format *attribute_format*

Specify the attribute format.

identifier *identifier_type*

Specify the identifier type.

Must be one of the following:

- **addr**
- **circuit-id-tag**
- **client-mac-address-custom1**
- **client-mac-address-custom2**
- **client-mac-address-ietf**
- **client-mac-address-raw**
- **client-mac-address**
- **dhcp-client-id-spl**
- **dhcp-client-id**
- **dhcp-user-class**
- **dhcp-vendor-class**
- **dhcpv4-client-id-spl**
- **dhcpv4-vendor-class**

- **dhcpv6-client-id-ent-ident**
- **dhcpv6-interface-id**
- **dhcpv6-vendor-class-string**
- **inner-vlan-id**
- **outer-vlan-id**
- **physical-adapter**
- **physical-chassis**
- **physical-port**
- **physical-slot**
- **physical-subslot**
- **port-type**
- **pppoe-session-id**
- **remote-id-tag**
- **service-name**
- **user-plane**
- **username**

value *user_name*

Specify the user name.

Usage Guidelines Use this command to configure the default user name.

profile attribute-format

Configures AAA attribute templates.

Command Modes Exec > Global Configuration (config)

Syntax Description **attribute-format** *profile_name* **format-order** *attributes* **format-string** *format_string*

profile_name

Specify the profile name.

format-string *format_string*

Specify the format pattern. For example, %s*delimiter*%s*delimiter*%s.

profile_name

Specify the profile name.

format-order *attributes*

Specify the ordered list of attributes.

Must be one of the following:

- **addr**
- **circuit-id-tag**
- **client-mac-address-custom1**
- **client-mac-address-custom2**
- **client-mac-address-ietf**
- **client-mac-address-raw**
- **client-mac-address**
- **dhcp-client-id-spl**
- **dhcp-client-id**
- **dhcp-user-class**
- **dhcp-vendor-class**
- **dhcpv4-client-id-spl**
- **dhcpv4-vendor-class**
- **dhcpv6-client-id-ent-ident**
- **dhcpv6-interface-id**
- **dhcpv6-vendor-class-string**
- **inner-vlan-id**
- **outer-vlan-id**
- **physical-adapter**
- **physical-chassis**
- **physical-port**
- **physical-slot**
- **physical-subslot**
- **port-type**
- **pppoe-session-id**
- **remote-id-tag**
- **service-name**

- **user-plane**
- **username**

format-string *format_string*

Specify the format pattern. For example, %s*delimiter*%s*delimiter*%s.

profile_name

Specify the profile name.

You can configure a maximum of 32 elements with this keyword.

Usage Guidelines Use this command to configure AAA attribute templates.

profile coa

Configures RADIUS Dynamic-author/COA parameters.

Command Modes Exec > Global Configuration

Syntax Description **coa server-key** *server_shared_secret_key*

server-key *server_shared_secret_key*

Specify the COA server shared secret key.

Must be a string.

Usage Guidelines Use this command to configure RADIUS Dynamic-author/COA parameters.

profile coa client

Configures RADIUS COA client parameters.

Command Modes Exec > Global Configuration

Syntax Description **client ip** *client_ip_address* **server-key** *client_shared_secret_key*

ip *client_ip_address*

Specify the client IP address.

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

-Or-

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

server-key *client_shared_secret_key*

Specify the client shared secret key.

Must be a string.

Usage Guidelines Use this command to configure RADIUS COA client parameters.

profile dhcp

Configures DHCP profiles.

Command Modes Exec > Global Configuration (config)

Syntax Description **dhcp** *dhcp_profile_name*

dhcp_profile_name

Specify the DHCP profile name.

Usage Guidelines Use this command to configure DHCP profiles. Enters the DHCP Profile Configuration mode.

profile dhcp ipv4

Configures DHCP IPv4 parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*)

Syntax Description **ipv4 [mode** *dhcp_mode* **]**

mode *dhcp_mode*

Specify the DHCP server or proxy mode.

Must be one of the following:

- **proxy**
- **server**

Default Value: server.

Usage Guidelines Use this command to configure DHCP IPv4 parameters. Enters the DHCP IPv4 Configuration mode.

profile dhcp ipv4 class

Configures DHCP IPv4 class configuration parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4)

Syntax Description **class** *dhcp_class_name*

dhcp_class_name

Specify the DHCP class name.

Usage Guidelines Use this command to configure DHCP IPv4 class configuration parameters. Enters the DHCP Class Configuration mode.

profile dhcp ipv4 class matches

Configures the list of match values.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*)

Syntax Description **matches [match-type { all | any }]**

match-type *match_type*

Specify to match any or match all.

Must be one of the following:

- **all**
- **any**

Usage Guidelines Use this command to configure the list of match values. Enters the Matches Configuration mode.

profile dhcp ipv4 class matches match

Configures match key and value.

Command Modes Exec > Global Configuration (config) > DHCP Configuration (config-dhcp-*dhcp_profile_name*) > DHCP Class Configuration (config-class-*dhcp_class_name*) > Matches Configuration (config-matches)

Syntax Description **match** *match_key* **{ ascii** *ascii_string* **| hex** *hex_string* **}**

ascii *ascii_string*

Specify the ASCII strings.

match_key

Specify the match key.

Must be one of the following:

- **dhcpv4-circuit-id**
- **dhcpv4-remote-id**

- **dhcpv4-user-class**
- **dhcpv4-vendor-class**

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

ascii ***ascii_string***

Specify the ASCII strings.

hex ***hex_string***

Specify the hexadecimal string.

Must be a string of 1-128 characters in the pattern ([0-9a-fA-F]{2}([0-9a-fA-F]{2})*)?.

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

match_key

Specify the match key.

Must be one of the following:

- **dhcpv4-circuit-id**
- **dhcpv4-remote-id**
- **dhcpv4-user-class**
- **dhcpv4-vendor-class**

Usage Guidelines Use this command to configure match key and value.

profile dhcp ipv4 class server

Configures DHCP server mode.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*)

Syntax Description **server [boot-filename** *boot_file_name* **| dns-servers** *ip_address* **| domain-name** *domain_name* **| netbios-name-server** *ip_address* **| next-server** *ip_address* **| ntp-servers** *ntp_servers* **| pool-name** *pool_name* **]**

pool-name ***pool_name***

Specify the pool name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

boot-filename *boot_file_name*

Specify the boot file name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

boot-filename*boot_file_name*

Specify the boot file name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

next-server *ip_address*

Specify the TFTP server IP address to be used by the client.

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

Usage Guidelines Use this command to configure the DHCP server mode. Enters the DHCP Server Configuration mode.

profile dhcp ipv4 class server lease

Configures DHCP Server Lease parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **`lease { [ days`** *`days`* **`] [ hours`** *`hours`* **`] [ minutes`** *`minutes`* **`] }`**

days *days*

Specify the number of days.

Must be an integer in the range of 0-365.

hours *hours*

Specify the hours.

Must be an integer in the range of 0-23.

minutes *minutes*

Specify the minutes.

Must be an integer in the range of 0-59.

Usage Guidelines Use this command to configure the DHCP Server Lease parameters.

profile dhcp ipv4 class server netbios-node-type

Configures NetBIOS node type.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **netbios-name-server { broadcast-node | hexadecimal** *hex_number* **| hybrid-node | mixed-node | peer-to-peer-node }**

broadcast-node

Specify broadcast node.

hexadecimal *hex_number*

Specify the hexadecimal number.

Must be a string of 2 characters in the pattern ([0-9a-fA-F]{2}(:[0-9a-fA-F]{2})*)?.

hybrid-node

Specify hybrid node.

mixed-node

Specify mixed node.

peer-to-peer-node

Specify peer-to-peer node.

Usage Guidelines Use this command to configure the NetBIOS node type.

profile dhcp ipv4 class server option-codes

Configures the OptionCode table.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **option-codes**

Usage Guidelines Use this command to configure the OptionCode table. Enters the Option Codes Configuration mode.

profile dhcp ipv4 class server option-codes option-code

Configures a DHCP option code.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server) > Option Codes Configuration (config-option-codes)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server) > Option Codes Configuration (config-option-codes)

Syntax Description **option-code** *dhcp_option_code* **[ascii-string** *ascii_string* **| force-insert { false | true } | hex-string** *hex_string* **| ip-address** *ip_address* **]**

ascii-string *ascii_string*

Specify the ASCII string.

option-code *dhcp_option_code*

Specify the DHCP option code.

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

ascii-string *ascii_string*

Specify the ASCII string.

force-insert { false | true }

Specify whether to force insert this option.

Must be one of the following:

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

hex-string *hex_string*

Specify the hexadecimal string.

Must be a string of 1-128 characters in the pattern ([0-9a-fA-F]{2}([0-9a-fA-F]{2})*)?.

ip-address *ip_address*

Specify the server's IP addresses.

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

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

option-code *dhcp_option_code*

Specify the DHCP option code.

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

Usage Guidelines Use this command to configure a DHCP option code. Enters the Option Code Configuration mode.

profile dhcp ipv4 server

Configures DHCP server mode.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*)

Syntax Description **server [boot-filename** *boot_file_name* **| dns-servers** *ip_address* **| domain-name** *domain_name* **| netbios-name-server** *ip_address* **| next-server** *ip_address* **| ntp-servers** *ntp_servers* **| pool-name** *pool_name* **]**

pool-name *pool_name*

Specify the pool name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

boot-filename *boot_file_name*

Specify the boot file name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

boot-filename *boot_file_name*

Specify the boot file name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

netbios-name-server *ip_address*

Specify the NetBIOS name server IP addresses.

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

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

next-server *ip_address*

Specify the TFTP server IP address to be used by the client.

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

ntp-servers *ntp_servers*

Specify the NTP servers.

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

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

pool-name *pool_name*

Specify the pool name.

Usage Guidelines Use this command to configure the DHCP server mode. Enters the DHCP Server Configuration mode.

profile dhcp ipv4 server lease

Configures DHCP Server Lease parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **`lease { [ days`** *`days`* **`] [ hours`** *`hours`* **`] [ minutes`** *`minutes`* **`] }`**

days *days*

Specify the number of days.

Must be an integer in the range of 0-365.

hours *hours*

Specify the hours.

Must be an integer in the range of 0-23.

minutes *minutes*

Specify the minutes.

Must be an integer in the range of 0-59.

Usage Guidelines Use this command to configure the DHCP Server Lease parameters.

profile dhcp ipv4 server netbios-node-type

Configures NetBIOS node type.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **`netbios-name-server { broadcast-node | hexadecimal`** *`hex_number`* **`| hybrid-node | mixed-node | peer-to-peer-node }`**

broadcast-node

Specify broadcast node.

hexadecimal *hex_number*

Specify the hexadecimal number.

Must be a string of 2 characters in the pattern ([0-9a-fA-F]{2}(:[0-9a-fA-F]{2})*)?.

hybrid-node

Specify hybrid node.

mixed-node

Specify mixed node.

peer-to-peer-node

Specify peer-to-peer node.

Usage Guidelines Use this command to configure the NetBIOS node type.

profile dhcp ipv4 server option-codes

Configures the OptionCode table.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description `option-codes`

Usage Guidelines Use this command to configure the OptionCode table. Enters the Option Codes Configuration mode.

profile dhcp ipv4 server option-codes option-code

Configures a DHCP option code.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Server Configuration Mode (config-server) > Option Codes Configuration (config-option-codes)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv4 Configuration (config-ipv4) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server) > Option Codes Configuration (config-option-codes)

Syntax Description **option-code** *dhcp_option_code* **[ascii-string** *ascii_string* **| force-insert { false | true } | hex-string** *hex_string* **| ip-address** *ip_address* **]**

ascii-string *ascii_string*

Specify the ASCII string.

option-code *dhcp_option_code*

Specify the DHCP option code.

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

ascii-string *ascii_string*

Specify the ASCII string.

force-insert { false | true }

Specify whether to force insert this option.

Must be one of the following:

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

hex-string *hex_string*

Specify the hexadecimal string.

Must be a string of 1-128 characters in the pattern ([0-9a-fA-F]{2}([0-9a-fA-F]{2})*)?.

ip-address *ip_address*

Specify the server's IP addresses.

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

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

option-code *dhcp_option_code*

Specify the DHCP option code.

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

Usage Guidelines Use this command to configure a DHCP option code. Enters the Option Code Configuration mode.

profile dhcp ipv6

Configures DHCP IPv6 parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*)

Syntax Description **`ipv6 [ mode`** *`dhcp_mode`* **`]`**

mode *dhcp_mode*

Specify the DCHP mode server or proxy.

Must be one of the following:

- **proxy**
- **server**

Default Value: server.

Usage Guidelines Use this command to configure DHCP IPv6 parameters. Enters the DHCP IPv6 Configuration mode.

profile dhcp ipv6 class

Configures DHCP IPv6 class configuration parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6)

Syntax Description **`class`** *`dhcp_class_name`*

dhcp_class_name

Specify the DHCP class name.

Usage Guidelines Use this command to configure DHCP IPv6 class configuration parameters.

profile dhcp ipv6 class server

Configures DHCP server mode.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Class Configuration (config-class-*dhcp_class_name*)

Syntax Description **server { aftr-name** *aftr_name* **| dns-servers** *ip_address* **| domain-name** *domain_name* **| iana-pool-name** *iana_pool_name* **| iapd-pool-name** *iapd_pool_name* **| preference** *server_preference* **| rapid-commit }**

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

aftr-name *aftr_name*

Specify the Address Family Transition Router (AFTR) name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

preference *server_preference*

Specify the DHCP server preference.

Must be an integer in the range of 1-255.

aftr-name *aftr_name*

Specify the Address Family Transition Router (AFTR) name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

preference *server_preference*

Specify the DHCP server preference.

Must be an integer in the range of 1-255.

rapid-commit

Specify to allow rapid commit.

Usage Guidelines Use this command to configure the DHCP server mode.

profile dhcp ipv6 class server lease

Configures the lease parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **`lease { [ days`** *`days`* **`] [ hours`** *`hours`* **`] [ minutes`** *`minutes`* **`] }`**

days *days*

Specify the number of days.

Must be an integer in the range of 0-365.

hours *hours*

Specify the hours.

Must be an integer in the range of 0-23.

minutes *minutes*

Specify the minutes.

Must be an integer in the range of 1-59.

Usage Guidelines Use this command to configure lease parameters.

profile dhcp ipv6 server

Configures DHCP server mode.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Class Configuration (config-class-*dhcp_class_name*)

Syntax Description **server { aftr-name** *aftr_name* **| dns-servers** *ip_address* **| domain-name** *domain_name* **| iana-pool-name** *iana_pool_name* **| iapd-pool-name** *iapd_pool_name* **| preference** *server_preference* **| rapid-commit }**

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

aftr-name *aftr_name*

Specify the Address Family Transition Router (AFTR) name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

preference *server_preference*

Specify the DHCP server preference.

Must be an integer in the range of 1-255.

aftr-name *aftr_name*

Specify the Address Family Transition Router (AFTR) name.

dns-servers *ip_address*

Specify the DNS server IP addresses.

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

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

domain-name *domain_name*

Specify the domain name.

iana-pool-name *iana_pool_name*

Specify the IANA pool name.

iapd-pool-name *iapd_pool_name*

Specify the IAPD pool name.

preference *server_preference*

Specify the DHCP server preference.

Must be an integer in the range of 1-255.

rapid-commit

Specify to allow rapid commit.

Usage Guidelines

Use this command to configure the DHCP server mode.

profile dhcp ipv6 server lease

Configures the lease parameters.

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Server Configuration Mode (config-server)

Command Modes Exec > Global Configuration (config) > DHCP Profile Configuration (config-dhcp-*dhcp_profile_name*) > DHCP IPv6 Configuration (config-ipv6) > DHCP Class Configuration (config-class-*dhcp_class_name*) > DHCP Server Configuration Mode (config-server)

Syntax Description **lease { [days** *days* **] [hours** *hours* **] [minutes** *minutes* **] }**

days *days*

Specify the number of days.

Must be an integer in the range of 0-365.

hours *hours*

Specify the hours.

Must be an integer in the range of 0-23.

minutes *minutes*

Specify the minutes.

Must be an integer in the range of 1-59.

Usage Guidelines Use this command to configure lease parameters.

profile feature-template

Configures feature templates.

Command Modes Exec > Global Configuration

Syntax Description **feature-template** *feature_template_name* **{ vrf-name** *vrf_name* **| idle-timeout** *idle_timeout* **}**

feature_template_name

Specify the feature template name.

vrf-name *vrf_name*

Specify the VRF name.

feature_template_name

Specify the feature template name.

httpr-policy *httpr_policy_name*

Specify the PBR HTTPR policy name.

vrf-name *vrf_name*

Specify the VRF name.

feature_template_name

Specify the feature template name.

Usage Guidelines Use this command to configure feature templates.

profile feature-template ipv4

Configures IPv4 features.

Command Modes Exec > Global Configuration

Syntax Description **ipv4 { mtu** *maximum_transmission_unit* **| ingress-acl** *ingress_ipv4_acl_name* **| egress-acl** *egress_ipv4_acl_name* **| disable-unreachables }**

ingress-acl *ingress_ipv4_acl_name*

Specify the ingress IPV4 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 68-65535.

egress-acl *egress_ipv4_acl_name*

Specify the egress IPV4 ACL name.

ingress-acl *ingress_ipv4_acl_name*

Specify the ingress IPV4 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 68-65535.

disable-unreachables

Specify to disable sending ICMP Unreachable messages.

egress-acl *egress_ipv4_acl_name*

Specify the egress IPV4 ACL name.

ingress-acl *ingress_ipv4_acl_name*

Specify the ingress IPV4 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 68-65535.

Usage Guidelines Use this command to configure IPv4 features.

profile feature-template ipv4 verify-unicast-source

Enables per-packet validation for unicast.

Command Modes Exec > Global Configuration

Syntax Description **verify-unicast-source reachable-via-rx**

reachable-via-rx

Specify the source is reachable via interface on which packet was received.

Usage Guidelines Use this command to enable per-packet validation for unicast.

profile feature-template ipv6

Configures IPv6 features.

Command Modes Exec > Global Configuration

Syntax Description **ipv6 { mtu** *maximum_transmission_unit* **| ingress-acl** *ingress_ipv6_acl_name* **| egress-acl** *egress_ipv6_acl_name* **}**

ingress-acl *ingress_ipv6_acl_name*

Specify the ingress IPV6 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 1280-65535.

egress-acl *egress_ipv6_acl_name*

Specify the egress IPV6 ACL name.

ingress-acl *ingress_ipv6_acl_name*

Specify the ingress IPV6 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 1280-65535.

disable-unreachables

Specify to disable sending ICMP Unreachable messages.

egress-acl *egress_ipv6_acl_name*

Specify the egress IPV6 ACL name.

ingress-acl *ingress_ipv6_acl_name*

Specify the ingress IPV6 ACL name.

mtu *maximum_transmission_unit*

Specify the Maximum Transmission Unit in bytes.

Must be an integer in the range of 1280-65535.

Usage Guidelines Use this command to configure IPv6 features.

profile feature-template ipv6 verify-unicast-source

Configures per packet validation for unicast.

Command Modes Exec > Global Configuration

Syntax Description **`verify-unicast-source [ reachable-via-rx ]`**

reachable-via-rx

Specify source is reachable via interface on which packet was received.

Usage Guidelines Use this command to configure per packet validation for unicast.

profile feature-template ppp

Configures PPP feature.

Command Modes Exec > Global Configuration

Syntax Description **`ppp authentication`** *`authentication_method`*

authentication *authentication_method*

Specify the authentication method.

Must be one of the following:

- **chap**
- **pap**

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

max-bad-auth *max_auth_failures*

Specify the maximum authentication failures to allow.

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

max-configure *max_configure*

Specify the maximum conf-reqs to send without response.

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

max-failure *max_conf_naks*

Specify the maximum conf-naks to receive.

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

service-type *service_type*

Specify the service type.

Must be one of the following:

- **outbound**

Usage Guidelines Use this command to configure the PPP feature.

profile feature-template ppp chap

Configures CHAP parameters.

Command Modes Exec > Global Configuration

Syntax Description **chap hostname** *chap_host_name* **password** *chap_password*

hostname *chap_host_name*

Specify the CHAP host name.

hostname *chap_host_name*

Specify the CHAP host name.

password *chap_password*

Specify the CHAP password.

Must be a string.

Usage Guidelines Use this command to configure CHAP parameters.

profile feature-template ppp ipcp

Configures PPP IPCP negotiation parameters.

Command Modes Exec > Global Configuration

Syntax Description **ipcp { mask** *ipv4_netmask* **| passive | peer-address-pool** *peer_address_pool_name* **| peer-address-default** *peer_address_default* **| prot-reject }**

peer-address-pool *peer_address_pool_name*

Specify the peer-address pool name.

Usage Guidelines Use this command to configure PPP IPCP negotiation parameters.

profile feature-template ppp ipcp dns

Configures DNS address to be used for peer.

Command Modes Exec > Global Configuration

Syntax Description **dns primary-address** *primary_address* **secondary-address** *secondary_address*

primary-address *primary_address*

Specify the primary address. The first address is considered as Primary and second address as Secondary.

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

secondary-address *secondary_address*

Specify the secondary address.

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

Usage Guidelines Use this command to configure DNS address to be used for peer.

profile feature-template ppp ipcp renegotiation

Configures renegotiation parameters.

Command Modes Exec > Global Configuration

Syntax Description **renegotiation ignore**

ignore

Specify to ignore attempts by the peer to renegotiate LCP.

Usage Guidelines Use this command to configure renegotiation parameters.

profile feature-template ppp ipcp wins

Configures WINS address to be used for peer.

Command Modes Exec > Global Configuration

Syntax Description **wins primary-address** *primary_ip_address* **secondary-address** *secondary_ip_address*

primary-address *primary_ip_address*

Specify the primary address.

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

secondary-address *secondary_ip_address*

Specify the secondary address.

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

Usage Guidelines Use this command to configure WINS address to be used for peer.

profile feature-template ppp ipv6cp

Configures IPv6CP negotiation parameters.

Command Modes Exec > Global Configuration

Syntax Description **ipv6cp { passive | peer-interface-id** *peer_interface_id* **| prot-reject }**

Usage Guidelines Use this command to configure IPv6CP negotiation parameters.

profile feature-template ppp ipv6cp renegotiation

Configures renegotiation parameters.

Command Modes Exec > Global Configuration

Syntax Description `renegotiation ignore`

ignore

Specify to ignore attempts by the peer to renegotiate LCP.

Usage Guidelines Use this command to configure renegotiation parameters.

profile feature-template ppp keepalive

Configures PPP Keepalive parameters.

Command Modes Exec > Global Configuration

Syntax Description `keepalive { disable | interval` *keepalive_interval* `| retry` *keepalive_retries* `}`

disable

Specify to disable PPP keepalive.

interval *keepalive_interval*

Specify the keepalive interval in minutes.

Must be an integer in the range of 10-120.

retry *keepalive_retries*

Specify the number of keepalive retries.

Must be an integer in the range of 1-255.

Usage Guidelines Use this command to configure PPP Keepalive parameters.

profile feature-template ppp lcp

Configures LCP global configuration parameters.

Command Modes Exec > Global Configuration

Syntax Description `lcp send-termreq-on-shutdown`

Usage Guidelines Use this command to configure LCP global configuration parameters.

profile feature-template ppp lcp delay

Configures the time to delay before starting active LCP negotiations.

Command Modes Exec > Global Configuration

Syntax Description `delay seconds delay_value milliseconds delay_value`

milliseconds *delay_value*

Specify the delay value in milliseconds.

Must be an integer in the range of 0-70000000.

seconds *delay_value*

Specify the delay value in seconds.

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

Usage Guidelines Use this command to configure the time to delay before starting active LCP negotiations.

profile feature-template ppp lcp renegotiation

Configures LCP renegotiation.

Command Modes Exec > Global Configuration

Syntax Description `renegotiation ignore`

ignore

Specify to ignore attempts by the peer to renegotiate LCP.

Usage Guidelines Use this command to configure LCP renegotiation.

profile feature-template ppp pap

Configures PAP parameters.

Command Modes Exec > Global Configuration

Syntax Description `pap accept-null-password`

accept-null-password

Specify to accept null-password.

Usage Guidelines Use this command to configure PAP parameters.

profile feature-template ppp timeout

Configures PPP timeout parameters.

Command Modes Exec > Global Configuration (config) > Endpoint N4 Protocol Configuration (config-endpoint-n4-protocol)

Syntax Description **retransmission timeout** *total_auth_complete_time* **[retry** *max_response_time* **]**

authentication *total_auth_complete_time*

Specify the total time to allow for authentication to complete.

Must be an integer in the range of 3-30.

retry *max_response_time*

Specify the maximum time to wait for a response to a Conf-Req in seconds.

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

Usage Guidelines Use this command to configure PPP timeout parameters.

profile feature-template ppp timeout absolute

Configures the absolute timeout period for a PPP session.

Command Modes Exec > Global Configuration

Syntax Description **timeout absolute minutes** *timeout_minutes* **seconds** *timeout_seconds*

minutes *timeout_minutes*

Specify the timeout period in minutes.

Must be an integer in the range of 0-70000000.

Usage Guidelines Use this command to configure the absolute timeout period for a PPP session.

profile feature-template qos

Configures QoS input policy parameters.

Command Modes Exec > Global Configuration

Syntax Description **qos { in-policy** *in_policy_name* **| out-policy** *out_policy_name* **| merge-level** *merge_level* **}**

in-policy *in_policy_name*

Specify the QOS input policy name.

in-policy *in_policy_name*

Specify the QOS input policy name.

out-policy *out_policy_name*

Specify the QOS output policy name.

in-policy *in_policy_name*

Specify the QOS input policy name.

merge-level *merge_level*

Specify the merge level. 0 = merge disabled,

0 = merge enabled + level. Must be an integer.

out-policy *out_policy_name*

Specify the QOS output policy name.

Usage Guidelines Use this command to configure QoS input policy parameters.

profile feature-template service-accounting

Configures service accounting parameters.

Command Modes Exec > Global Configuration

Syntax Description **service-accounting enable { aaa-profile** *aaa_profile_name* **| periodic-interval** *interim_interval* **}**

aaa-profile *aaa_profile_name*

Specify the AAA profile to use for service accounting.

enable

Specify to enable service accounting.

periodic-interval *interim_interval*

Specify the interim interval in seconds.

Must be an integer in the range of 60-4320000.

Usage Guidelines Use this command to configure service accounting parameters.

profile feature-template session-accounting

Configures session accounting parameters.

Command Modes Exec > Global Configuration

Syntax Description **session-accounting enable { aaa-profile** *aaa_profile_name* **| periodic-interval** *interim_interval* **| dual-stack-delay** *dual_stack_delay_wait* **}**

aaa-profile *aaa_profile_name*

Specify the AAA profile to use for session accounting.

dual-stack-delay *dual_stack_delay_wait*

Specify the dual stack set delay wait in seconds.

Must be an integer in the range of 1-30.

enable

Specify to enable session accounting.

periodic-interval *interim_interval*

Specify the interim interval in seconds.

Must be an integer in the range of 60-4320000.

Usage Guidelines Use this command to configure session accounting parameters.

profile pppoe

Configures PPPOE Subscriber profiles.

Command Modes Exec > Global Configuration

Syntax Description **ppoe** *ppoe_profile_name* **mtu** *pado_delay* **ctrl-pkt-priority** *priority*

ppoe_profile_name

Specify the PPOE profile name.

ctrl-pkt-priority *priority*

Specify the CoS bits to use in PADx packets.

Must be an integer in the range of 0-7.

Default Value: 0.

mtu *pppoe_mtu*

Specify the PPPoE MTU for LCP negotiation.

Must be an integer in the range of 500-2000.

Default Value: 1492.

service-name *pppoe_service_names*

Specify the supported PPPoE service names. You can simultaneously configure multiple service names.

service-selection-disable { false | true }

Specify to disable or enable the advertising of extra service names in PADO packets.

Must be one of the following:

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

Default Value: false.

ppoe_profile_name

Specify the PPOE profile name.

ac-name *ac_name*

Specify the the AC-Name to use in PADO packets.

ctrl-pkt-priority *priority*

Specify the CoS bits to use in PADx packets.

Must be an integer in the range of 0-7.

Default Value: 0.

mtu *pppoe_mtu*

Specify the PPPoE MTU for LCP negotiation.

Must be an integer in the range of 500-2000.

Default Value: 1492.

service-name *pppoe_service_names*

Specify the supported PPPoE service names. You can simultaneously configure multiple service names.

service-selection-disable { false | true }

Specify to disable or enable the advertising of extra service names in PADO packets.

Must be one of the following:

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

Default Value: false.

ppoe_profile_name

Specify the PPOE profile name.

ac-cookie *ac_cookie*

Specify the AC-Cookie to use in PADO packets.

ac-name *ac_name*

Specify the the AC-Name to use in PADO packets.

ctrl-pkt-priority *priority*

Specify the CoS bits to use in PADx packets.

Must be an integer in the range of 0-7.

Default Value: 0.

mtu *pppoe_mtu*

Specify the PPPoE MTU for LCP negotiation.

Must be an integer in the range of 500-2000.

Default Value: 1492.

service-name *pppoe_service_names*

Specify the supported PPPoE service names. You can simultaneously configure multiple service names.

service-selection-disable { false | true }

Specify to disable or enable the advertising of extra service names in PADO packets.

Must be one of the following:

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

Default Value: false.

ppoe_profile_name

Specify the PPOE profile name.

ac-cookie *ac_cookie*

Specify the AC-Cookie to use in PADO packets.

ac-name *ac_name*

Specify the the AC-Name to use in PADO packets.

ctrl-pkt-priority *priority*

Specify the CoS bits to use in PADx packets.

Must be an integer in the range of 0-7.

Default Value: 0.

mtu *pppoe_mtu*

Specify the PPPoE MTU for LCP negotiation.

Must be an integer in the range of 500-2000.

Default Value: 1492.

service-name *pppoe_service_names*

Specify the supported PPPoE service names. You can simultaneously configure multiple service names.

service-selection-disable { false | true }

Specify to disable or enable the advertising of extra service names in PADO packets.

Must be one of the following:

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

Default Value: false.

timeout-completion *session_completion_timeout*

Specify the maximum wait time for session to be completed.

Must be an integer in the range of 3-600.

Default Value: 180.

ppoe_profile_name

Specify the PPOE profile name.

Usage Guidelines Use this command to configure PPPOE Subscriber profiles.

profile pppoe max-payload

Configures a range for the ppp-max payload tag value.

Command Modes Exec > Global Configuration

Syntax Description **`max-payload deny minimum`** *`minimum_payload_value`* **`maximum`** *`maximum_payload_value`*

deny

Specify to deny the PPP-max payload value.

maximum *maximum_payload_value*

Specify the maximum payload value.

Must be an integer in the range of 1-40000.

Default Value: 1500.

minimum *minimum_payload_value*

Specify the minimum value for the payload.

Must be an integer in the range of 1-40000.

Default Value: 1492.

Usage Guidelines Use this command to configure a range for the ppp-max payload tag value.

profile pppoe session-limit circuit-id

Configures the maximum number of sessions allowed per Circuit-ID.

Command Modes Exec > Global Configuration

Syntax Description **circuit-id** *options*

threshold *threshold_count*

Specify the threshold count.

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

value *attribute_value*

Specify the attribute value.

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

Usage Guidelines Use this command to configure the maximum number of sessions allowed per Circuit-ID.

profile pppoe session-limit mac

Configures the maximum number of sessions allowed per peer MAC address.

Command Modes Exec > Global Configuration

Syntax Description **mac** *options*

threshold *threshold_count*

Specify the threshold count.

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

value *attribute_value*

Specify the attribute value.

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

Usage Guidelines Use this command to configure the maximum number of sessions allowed per peer MAC address.

profile pppoe session-limit max

Configures the maximum number of sessions allowed under the PPPoE profile.

Command Modes Exec > Global Configuration

Syntax Description **max** *options*

threshold *threshold_count*

Specify the threshold count.

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

value *attribute_value*

Specify the attribute value.

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

Usage Guidelines Use this command to configure the maximum number of sessions allowed under the PPPoE profile.

profile pppoe session-limit outer-vlan

Configures the maximum number of sessions allowed per outer-vlan, per access interface.

Command Modes Exec > Global Configuration

Syntax Description **outer-vlan** *options*

threshold *threshold_count*

Specify the threshold count.

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

value *attribute_value*

Specify the attribute value.

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

Usage Guidelines Use this command to configure the maximum number of sessions allowed per outer-vlan, per access interface.

profile radius

Configures RADIUS client parameters.

Command Modes Exec > Global Configuration

Syntax Description `radius`

algorithm *radius_server_selection_algorithm*

Specify the algorithm for selecting RADIUS server.

Must be one of the following:

- **first-server**: Highest priority first.
- **round-robin**: Round-robin.

deadtime *dead_time*

Specify the time to elapse, in minutes, between RADIUS server marked unreachable and when connection can be re-attempted.

Must be an integer in the range of 0-65535.

max-retry *max_retry*

Specify the maximum number of times the system must attempt retry with the RADIUS server.

Must be an integer in the range of 0-65535.

timeout *retransmit_timeout_duration*

Specify the time duration to wait for response from the RADIUS server before retransmitting.

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

Usage Guidelines Use this command to configure RADIUS client parameters

profile radius accounting

Configures RADIUS accounting parameters.

Command Modes Exec > Global Configuration

Syntax Description `accounting`

algorithm *radius_server_selection_algorithm*

Specify the algorithm for selecting RADIUS server.

Must be one of the following:

- **first-server**: Highest priority first.
- **round-robin**: Round-robin.

deadtime *dead_time*

Specify the time to elapse, in minutes, between RADIUS server marked unreachable and when connection can be re-attempted.

Must be an integer in the range of 0-65535.

max-retry *max_retry*

Specify the maximum number of times the system must attempt retry with the RADIUS server.

Must be an integer in the range of 0-65535.

timeout *retransmit_timeout_duration*

Specify the time duration to wait for response from the RADIUS server before retransmitting.

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

Usage Guidelines Use this command to configure RADIUS accounting parameters.

profile radius accounting attribute called-station-id

Configures the AAA called-station-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **called-station-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify the value of the AAA called-station-id attribute.

Usage Guidelines Use this command to configure the AAA called-station-id attribute.

profile radius accounting attribute called-station-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius accounting attribute calling-station-id

Configures the AAA calling-station-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **calling-station-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify the value of the AAA calling-station-id attribute.

Usage Guidelines Use this command to configure the AAA calling-station-id attribute.

profile radius accounting attribute calling-station-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius accounting attribute nas-identifier-format

Configures the AAA nas-identifier-format attribute.

Command Modes Exec > Global Configuration

Syntax Description **`nas-identifier-format`**

format-name *format_name*

Specify the attribute format name.

Usage Guidelines Use this command to configure the AAA nas-identifier-format attribute.

profile radius accounting attribute nas-identifier-format format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **`format nas-port-type`** *`nas_port_type`* **`format-name`** *`format_name`*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius accounting attribute nas-port

Configures the AAA nas-port attribute.

Command Modes Exec > Global Configuration

Syntax Description **nas-port** *value*

format-e *format_e_value*

Specify the attribute format-e value.

Must be a string of 32 characters in the pattern ([01FSAPRiLUVQ]*).

value

Specify value of the nas-port attribute.

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

Usage Guidelines Use this command to configure the AAA nas-port attribute.

profile radius accounting attribute nas-port format-e-list

Configures the AAA nas-port-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **format-e-list nas-port-type** *nas_port_type_value* **format-e** *format_e_value*

format-e *format_e_value*

Specify the attribute format-e value.

Must be a string of 32 characters in the pattern ([01FSAPRiLVQ]*).

nas-port-type *nas_port_type_value*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure the AAA nas-port-id attribute.

profile radius accounting attribute nas-port-id

Configures the AAA nas-port-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **nas-port-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify value of the AAA nas-port-id attribute.

Usage Guidelines Use this command to configure the AAA nas-port-id attribute.

profile radius accounting attribute nas-port-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius accounting detect-dead-server

Configures parameters to detect a dead RADIUS server.

Command Modes Exec > Global Configuration

Syntax Description **detect-dead-server response-timeout** *response_timeout_duration*

response-timeout *response_timeout_duration*

Specify the time duration, in seconds, for a response from the RADIUS server to mark it as unreachable.

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

Usage Guidelines Use this command to configure parameters to detect a dead RADIUS server.

profile radius attribute called-station-id

Configures the AAA called-station-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **called-station-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify the value of the AAA called-station-id attribute.

Usage Guidelines Use this command to configure the AAA called-station-id attribute.

profile radius attribute called-station-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius attribute calling-station-id

Configures the AAA calling-station-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **calling-station-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify the value of the AAA calling-station-id attribute.

Usage Guidelines Use this command to configure the AAA calling-station-id attribute.

profile radius attribute calling-station-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius attribute nas-identifier-format

Configures the AAA nas-identifier-format attribute.

Command Modes Exec > Global Configuration

Syntax Description **nas-identifier-format**

format-name *format_name*

Specify the attribute format name.

Usage Guidelines Use this command to configure the AAA nas-identifier-format attribute.

profile radius attribute nas-identifier-format format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type *nas_port_type*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius attribute nas-port

Configures the AAA nas-port attribute.

Command Modes Exec > Global Configuration

Syntax Description **nas-port** *value*

format-e *format_e_value*

Specify the attribute format-e value.

Must be a string of 32 characters in the pattern ([01FSAPRiLUVQ]*).

value

Specify value of the nas-port attribute.

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

Usage Guidelines Use this command to configure the AAA nas-port attribute.

profile radius attribute nas-port format-e-list

Configures the AAA nas-port-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **format-e-list nas-port-type** *nas_port_type_value* **format-e** *format_e_value*

format-e *format_e_value*

Specify the attribute format-e value.

Must be a string of 32 characters in the pattern ([01FSAPRiLVQ]*).

nas-port-type *nas_port_type_value*

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure the AAA nas-port-id attribute.

profile radius attribute nas-port-id

Configures the AAA nas-port-id attribute.

Command Modes Exec > Global Configuration

Syntax Description **nas-port-id** *value*

format-name *format_name*

Specify the attribute format name.

format-name *format_name*

Specify the attribute format name.

value

Specify value of the AAA nas-port-id attribute.

Usage Guidelines Use this command to configure the AAA nas-port-id attribute.

profile radius attribute nas-port-id format

Configures node parameters.

Command Modes Exec > Global Configuration

Syntax Description **format nas-port-type** *nas_port_type* **format-name** *format_name*

format-name *format_name*

Specify the attribute format name.

nas-port-type ***nas_port_type***

Specify the Nas-Port-Type value to apply format name on.

Must be an integer in the range of 0-44.

Usage Guidelines Use this command to configure node parameters for nas-port-id, calling-station-id, called-station-id, nas-identifier-format.

profile radius detect-dead-server

Configures parameters to detect a dead RADIUS server.

Command Modes Exec > Global Configuration

Syntax Description **`detect-dead-server response-timeout`** *`response_timeout_duration`*

response-timeout ***response_timeout_duration***

Specify the time duration, in seconds, for a response from the RADIUS server to mark it as unreachable.

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

Usage Guidelines Use this command to configure parameters to detect a dead RADIUS server.

profile radius server

Configures RADIUS external server configuration.

Command Modes Exec > Global Configuration

Syntax Description **`server`**

ip ***radius_server_ip_address***

Specify the 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 section.

-Or-

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

port ***radius_server_port_number***

Specify the port number of the RADIUS server.

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

priority *radius_server_priority*

Specify the priority of the RADIUS server.

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

secret *radius_server_secret*

Specify the secret of the RADIUS server.

Must be a string.

type *server_type*

Specify the server type.

Must be one of the following:

- **acct**
- **auth**

Default Value: auth.

Usage Guidelines Use this command to configure RADIUS external server configuration.

profile radius server-group

Configures association of RADIUS servers to groups.

Command Modes Exec > Global Configuration

Syntax Description **server-group**

group-name *group_name*

Specify the server group name.

Usage Guidelines Use this command to configure association of RADIUS servers to groups.

profile radius server-group server

Configures RADIUS server information.

Command Modes Exec > Global Configuration

Syntax Description **server type** *radius_server_type* **ip** *radius_server_ip_address* **port** *radius_port_number*

ip *radius_server_ip_address*

Specify IP address of the RADIUS server.

port *radius_port_number*

Specify the port number of the RADIUS server.

type *radius_server_type*

Specify the server type.

Must be one of the following:

- **acct**: Server used for accounting requests.
- **auth**: Server is used for authentication/authorization requests.

Usage Guidelines Use this command to configure RADIUS server information.

profile server-group

Configures AAA custom server groups.

Command Modes Exec > Global Configuration (config)

Syntax Description **server-group** *server_group_name*

aaa_server_group_name

Specify the AAA server group name.

radius-group *radius_server_group_name*

Specify the RADIUS server group name.

aaa_server_group_name

Specify the AAA server group name.

Usage Guidelines Use this command to configure AAA custom server groups.

profile subscriber

Configures subscriber profiles.

Command Modes Exec > Global Configuration (config)

Syntax Description **profile subscriber** *subscriber_profile_name* **{ dhcp-profile** *dhcp_profile_name* **| pppoe-profile** *pppoe_profile_name* **| session-type** *session_type* **}**

subscriber_profile_name

Specify the subscriber profile name.

activate-feature-templates *template_names*

Specify the list of feature templates to activate.

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

apply-all-class

Specify to apply all classes if enabled.

dhcp-profile *dhcp_profile_name*

Specify the DHCP-FSOL profile name.

pppoe-profile *pppoe_profile_name*

Specify the PPPOE-FSOL profile name.

session-type *session_type*

Specify the allowed session type.

Must be one of the following:

- **ipv4**
- **ipv4v6**
- **ipv6**

Default Value: ipv4v6.

subscriber_profile_name

Specify the subscriber profile name.

Usage Guidelines Use this command to configure subscriber profiles.

profile subscriber aaa

Configures AAA operations.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*)

Syntax Description **aaa** *aaa_option aaa_profile_name*

aaa_option

Specify the AAA option.

Must be one of the following:

- **authenticate**
- **authorize**

aaa_profile_name

Specify the AAA profile name.

Usage Guidelines Use this command to configure AAA operations.

profile subscriber class

Configures subscriber classification.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*)

Syntax Description **class** *class_name* **[activate-feature-templates** *feature_template_names* **]**

class_name

Specify the class name.

activate-feature-templates ***feature_template_names***

Specify the list of feature template names to activate.

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

class_name

Specify the class name.

Usage Guidelines Use this command to configure subscriber classification.

profile subscriber class aaa

Configures AAA operations.

Command Modes Exec > Global Configuration

Syntax Description `aaa { aaa-option aaa_option | profile profile_name }`

aaa-option *aaa_option*

Specify the AAA option.

Must be one of the following:

- **authenticate**
- **authorize**

profile *profile_name*

Specify the AAA profile name for authentication.

Usage Guidelines Use this command to configure AAA operations.

profile subscriber class matches

Configures the list of match values.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*)

Syntax Description `matches [ match-type { all | any } ]`

match-type *match_type*

Specify the match type.

Must be one of the following:

- **all**
- **any**

Usage Guidelines Use this command to configure the list of match values. Enters the Matches Configuration mode.

profile subscriber class matches match

Configures Match Key and value.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*) > Matches Configuration (config-matches)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*) > Matches Configuration (config-matches)

Syntax Description **match** *match_key* **{ type** *match_protocol* **| ascii** *ascii_string* **| regex** *regex_string* **}**

ascii *ascii_string*

Specify the ASCII string.

type *match_protocol*

Specify the match protocol.

Must be one of the following:

- **dhcp**
- **ppp**

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

match_key

Specify the match key.

Must be one of the following:

- **circuit-id**
- **protocol**
- **remote-id**
- **source-mac**
- **username**

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

ascii *ascii_string*

Specify the ASCII string.

regex *regex_string*

Specify the regular expression string.

type *match_protocol*

Specify the match protocol.

Must be one of the following:

- **dhcp**
- **ppp**

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

match_key

Specify the match key.

Must be one of the following:

- **circuit-id**
- **protocol**
- **remote-id**
- **source-mac**
- **username**

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

Usage Guidelines Use this command to configure Match Key and value.

profile subscriber event

Configures subscriber events.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*)

Syntax Description **event** *event_name* **[activate-feature-templates** *template_names* **| apply-all-class | deactivate-feature-templates** *template_names* **]**

activate-feature-templates *template_names*

Specify the list of feature templates to activate.

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

apply-all-class

Specify to apply all classes if enabled.

deactivate-feature-templates *template_names*

Specify the list of feature templates to deactivate.

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

event *event_name*

Specify the event name.

Must be one of the following:

- **session-activate**

Usage Guidelines Use this command to configure subscriber events.

profile subscriber event aaa

Configures AAA operations.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*)

Syntax Description **aaa** *aaa_option aaa_profile_name*

aaa_option

Specify the AAA option.

Must be one of the following:

- **authenticate**
- **authorize**

aaa_profile_name

Specify the AAA profile name.

Usage Guidelines Use this command to configure AAA operations.

profile subscriber event class

Configures subscriber classification.

Command Modes Exec > Global Configuration

Syntax Description **class { class-name** *class_name* **| deactivate-feature-templates** *template_names* **| activate-feature-templates** *template_names* **}**

class-name *class_name*

Specify the class name.

activate-feature-templates *template_names*

Specify the list of feature template names to activate.

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

class-name *class_name*

Specify the class name.

deactivate-feature-templates *template_names*

Specify the list of feature template names to deactivate.

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

Usage Guidelines Use this command to configure subscriber classification.

profile subscriber event class aaa

Configures AAA operations.

Command Modes Exec > Global Configuration

Syntax Description **aaa { aaa-option** *aaa_option* **| profile** *profile_name* **}**

aaa-option *aaa_option*

Specify the AAA option.

Must be one of the following:

- **authenticate**
- **authorize**

profile *profile_name*

Specify the AAA profile name for authentication.

Usage Guidelines Use this command to configure AAA operations.

profile subscriber event class matches

Configures the list of match values.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*)

Syntax Description `matches [ match-type { all | any } ]`

match-type *match_type*

Specify the match type.

Must be one of the following:

- **all**
- **any**

Usage Guidelines Use this command to configure the list of match values. Enters the Matches Configuration mode.

profile subscriber event class matches match

Configures Match Key and value.

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Class Configuration (config-class-*class_name*) > Matches Configuration (config-matches)

Command Modes Exec > Global Configuration (config) > Subscriber Profile Configuration (config-subscriber-*subscriber_profile_name*) > Event Configuration (config-event-*event_name*) > Class Configuration (config-class-*class_name*) > Matches Configuration (config-matches)

Syntax Description **match** *match_key* **{ type** *match_protocol* **| ascii** *ascii_string* **| regex** *regex_string* **}**

ascii *ascii_string*

Specify the ASCII string.

type *match_protocol*

Specify the match protocol.

Must be one of the following:

- **dhcp**
- **ppp**

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

match_key

Specify the match key.

Must be one of the following:

- **circuit-id**
- **protocol**
- **remote-id**

- **source-mac**
- **username**

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

ascii ***ascii_string***

Specify the ASCII string.

regex ***regex_string***

Specify the regular expression string.

type ***match_protocol***

Specify the match protocol.

Must be one of the following:

- **dhcp**
- **ppp**

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

match_key

Specify the match key.

Must be one of the following:

- **circuit-id**
- **protocol**
- **remote-id**
- **source-mac**
- **username**

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

Usage Guidelines Use this command to configure Match Key and value.

quit

Exits the management session.

Command Modes Exec

Syntax Description `quit`

Usage Guidelines Use this command to exit the management session.

radius

Displays RADIUS client data.

Command Modes Exec

Syntax Description `show radius`

Usage Guidelines Use this command to view RADIUS client data.

radius acct-server

Displays RADIUS accounting server data.

Command Modes Exec

Syntax Description `show radius acct-server`

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

radius auth-server

Displays RADIUS authentication server data.

Command Modes Exec

Syntax Description `show radius auth-server`

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

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.

radius-dyn-auth clients

Displays RADIUS dynamic-author information.

Command Modes Exec

Syntax Description `show radius clients`

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

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 `pod podtype` *pod_type*

podtype *pod_type*

Specify the pod type.

Usage Guidelines Use this command to configure Pod resource parameter.

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*

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 request parameter.

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

Syntax Description **memory request** *memory_resource_request*

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 request parameter.

resources

Displays resources information.

Command Modes Exec

Syntax Description **`show resources`**

Usage Guidelines Use this command to view resources information.

resources info

Displays resources information.

Command Modes Exec

Syntax Description **`show resources info`**

Usage Guidelines Use this command to view resources information.

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.

Usage Guidelines Use this command to configure the policy parameters.

rpc

Displays RPC information.

Command Modes Exec

Syntax Description `show rpc`

Usage Guidelines Use this command to view RPC information.

rpc all

Displays information for all RPCs.

Command Modes Exec

Syntax Description `show rpc all`

Usage Guidelines Use this command to view information for all RPCs.

running-status

Displays system running status information.

Command Modes Exec

Syntax Description **show running-status**

Usage Guidelines Use this command to view system running status information.

running-status info

Displays system running status information.

Command Modes Exec

Syntax Description **show running-status info**

Usage Guidelines Use this command to view system running status information.

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.

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.

sessions affinity

Displays instance-wise affinity count.

Command Modes Exec

Syntax Description **show sessions affinity**

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

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

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 } ]`

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 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's name, ID, or 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 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 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 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-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 route-synchronize

Synchronizes routes to UPF.

Command Modes Exec

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

upf *user_plane_name*

Specify the user plane name.

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 the user plane name.

Must be a string of 1-64 characters.

Usage Guidelines Use this command to synchronize sessions to UPF.

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.

test-radius accounting

Tests RADIUS accounting server function.

Command Modes Exec

Syntax Description **`test-radius accounting`**

all

Specify to test all configured servers.

Must be one of the following:

- **all**

client-nas *nas_ip_address*

Specify the client NAS IP address.

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

-Or-

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

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 the sever group name.

Must be a string of 1-64 characters.

server *server_ip_address*

Specify the RADIUS server IP address.

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

-Or-

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

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.

test-radius authentication

Tests RADIUS authentication server.

Command Modes Exec

Syntax Description `test-radius authentication`

all

Specify to test all configured servers.

Must be one of the following:

- **all**

client-nas ***nas_ip_address***

Specify the client NAS IP address.

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

-Or-

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

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 the sever group name.

Must be a string of 1-64 characters.

server ***server_ip_address***

Specify the RADIUS server IP address.

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

-Or-

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

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.

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

Syntax Description **`user-plane`** *`userplane_name`*

userplane_name

Specify the userplane name.

offline

Specify as offline.

subscriber-profile *subscriber_profile*

Specify the Subscriber Profile to associate at current level.

userplane_name

Specify the userplane name.

Usage Guidelines Use this command to configure the userplane configuration.

user-plane peer-address

Configures the userplane IP address.

Command Modes Exec > Global Configuration

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

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 section.

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

user-plane port-id

Configures Port Identifier parameters.

Command Modes Exec > Global Configuration

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

id ***port_id***

Specify the port identifier.

id ***port_id***

Specify the port identifier.

subscriber-profile ***subscriber_profile***

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

Usage Guidelines Use this command to configure Port Identifier parameters.

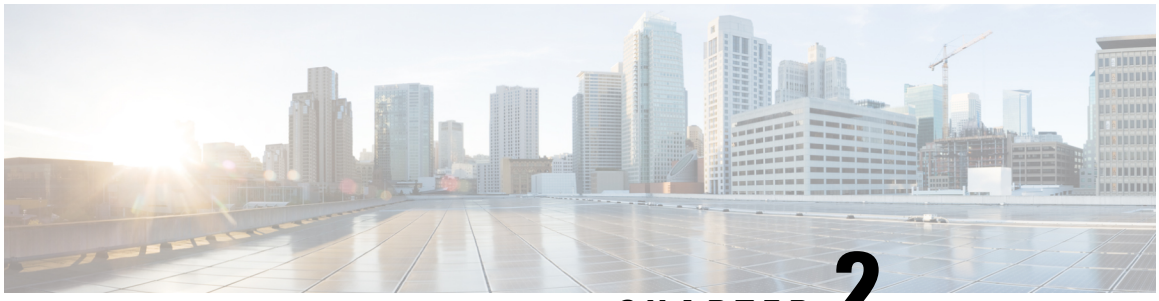
who

Displays information on currently logged on users.

Command Modes Exec

Syntax Description **who**

Usage Guidelines Use this command to view information on currently logged on users. The command output displays the Session, User, Context, From (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)